

# FAIRVIEW CAMPUS

New Middle School and High School

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Tony Marchio Drive  
Townsend, DE 19734

**BID PAC 'B'**



Volume 1 of 2  
DIVISION 0 - 1  
Date: November 14, 2017

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10 November 2017

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LIST OF DRAWINGS  
PU 09, Revised 5/11

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SECTION 001113 ADVERTISEMENT FOR BID

Receipt of Bids

Public notice is hereby given that sealed bids for the following prime contracts will be received for the construction of **Appoquinimink School District Fairview Campus Middle & High School** located in Townsend, Delaware. Bids will be received at the office of **Appoquinimink School District Office, Marion Proffitt Training Center, 118 South Sixth Street Odessa, DE 19730** until **2:00 PM** local time on **Thursday, December 14, 2017** at which time they will be publicly opened and read aloud. *Bidder bears the risk of late delivery. Any bids received after the stated time will be returned unopened.* The time and location of the bid opening may be extended with a minimum of 2 calendar days' notice to the Bidders.

Contract: **B-02 : Sitework (Campus)**

Contract: **B-03 : Driven Timber Piles (Campus)**

Contract: **B-04 : Foundation Concrete & Waterproofing (Campus)**

Contract: **B-05 : Foundation Masonry & Dampproofing (Campus)**

Bidding Document

1. Documents may be examined on the **State of Delaware Online Bid Solicitation Directory, [bids.delaware.gov](http://bids.delaware.gov)**, or at the office of the **Construction Manager, EDIS Company, 110 S. Poplar Street, Suite 400, Wilmington, Delaware 19801**; on or after **November 24, 2017**.
2. Documents may be viewed and downloaded at EDiS' FTP site on or after **November 24, 2017**. Bidders requesting the log on information may obtain user name and password permission by contracting: **Jackie McKee at [jmckee@ediscompany.com](mailto:jmckee@ediscompany.com)**. Each contractor will be required to provide the following information prior to receiving the log on information: company name, contact name, email address phone number, fax number and postal mailing address. Upon receipt of this information, instructions detailing how to access the bid document on the FTP site will be emailed to you.
3. It is the responsibility of each bidder to review and coordinate all Project Documents. This includes plans, specifications and addendums. Documents may be examined on the State of Delaware Online Bid Solicitation Directory, <http://bids.delaware.gov> or at the office of the Construction Manager, EDiS Company, 110 S. Poplar Street, Suite 400, Wilmington, DE 19801.

Bid Security

A bid security in the amount of 10% of the bid, plus a consent of surety must accompany each bid. Bid Security shall specify the Owner as the obligee. Owner: **Appoquinimink School District**.



Pre-Bid Meeting

A pre-bid meeting will be held at **Appoquinimink School District Office, Marion Proffitt Training Center, 118 South Sixth Street Odessa, DE 19730** on **Wednesday, November 29, 2017 at 3:00 PM** local time.

Questions

Please contact EDiS Company, Andrew Hickey at (302) 421-2972 or [ahickey@ediscompany.com](mailto:ahickey@ediscompany.com) with questions.

Conformance to the Delaware Architectural Accessibility Act and the standards of the Architectural Accessibility Board is required on the Project.

Prevailing Wage Rates

Prevailing Wage Rates, as directed by Delaware Law, must be adhered to where applicable.

Pursuant to the Office of Management and Budget (OMB) "4104 Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on Large Public Works Projects" required that Contractors and Subcontractors who work on Large Public Works Contracts funded all or in part with public funds implement a Mandatory Drug Testing Program. The regulation can be downloaded from the following website:

<http://regulations.delaware.gov/register/september2015/final/19%20DE%20Reg%20207%2009-01-15.pdf>

END OF SECTION

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SECTION 002113 - INSTRUCTIONS TO BIDDERS

1. DEFINITIONS

- A. Bidding Documents include the Bidding Requirements and the proposed Contract Documents. The Bidding Requirements consist of the Advertisement for Bid, Invitation to Bid, Instructions to Bidders, Supplementary Instructions to Bidders (if any), General Conditions, Supplementary General Conditions, General Requirements, Special Provisions (if any), the Bid Form (including the Non-collusion Statement), and other sample bidding and contract forms. The proposed Contract Documents consist of the form of Agreement between the Owner and Contractor, as well as the Drawings, Specifications (Project Manual) and all Addenda issued prior to execution of the Contract.
- B. All definitions set forth in the General Conditions and the other Contract Documents are applicable to the Bidding Documents.
- C. "Addenda" are written or graphic instruments issued by the Architect/Engineer prior to the receipt of bids which modify or interpret the Bidding Documents, by additions, deletions, clarifications or corrections. Addenda become part of the contract documents upon execution of the agreement.
- D. The term Work is defined in 1.1.3 of the General Conditions.
- E. A "Unit of Work" includes all Work covered by the one or more Sections of the specifications listed under that particular Unit of Work in Section 011100 - SUMMARY OF WORK. A Unit of Work is the smallest portion of the Project for which a separate Bid will be accepted by the Construction Manager. The word "Unit" means "Unit of Work" whenever the context clearly implies "Unit of Work".
- F. A "Bid" is a complete and properly executed proposal to do one or more Units of Work for the sum stipulated therein.
- G. A "Bidder" is one who submits a Bid to the Bidding Agency for the Unit or Units of Work indicated therein.
- H. A substantial amount of specification language constitutes definitions for terms found in other Contract Documents, including drawings, which must be recognized as diagrammatic in nature and not completely descriptive of requirements indicated thereon. Certain terms used in Contract Documents are defined generally in this article. Definitions and explanations to this section are not necessarily either complete or exclusive, but are general for the work to the extent not stated more explicitly in another provision of Contract Documents.
- I. General Requirements (or Conditions) apply to entire work of Contract and, where so

indicated, to other elements which are included in the project.

- J. The term “indicated” is a cross reference to details, notes or schedules on the Drawings, to other similar means of recording requirements in the Contract Documents. Where terms such as “shown”, “noted”, “schedule” and “specified” are used in lieu of “indicate,” it is for purpose of helping to locate cross reference and no limitation of location is intended, except as specifically noted.
- K. Where not otherwise explained, terms such as “directed”, “requested”, “authorized”, “selected”, “approved”, “required”, “accepted” and “permitted” mean “directed by Construction Manager or Architect”, “requested by Construction Manager or Architect”, etc.
- L. Where used in conjunction with Construction Manager’s or Architect’s response to submittals, requests, applications, inquiries, reports and claims by Contractor, the meaning of the term “approved” will be held to limitations of Construction Manager’s and Architect’s responsibilities and duties as specified in General and Supplementary Conditions. In no case will “approval” by Construction Manager or Architect be interpreted as a release of Contractor from responsibilities to fulfill requirements of the Contract Documents.
- M. The “Project Site” is the space available to Contractor for performance of the Work, either exclusively or in conjunction with others performing other work as part of the Project. The extent of project site is shown on the Drawings and may or may not be identical with description of the land upon which project is to be built. The Contractor shall visit the site to verify contract or construction limits.
- N. Except as otherwise defined in greater detail, term “furnish” is used to mean supply and deliver to project site, ready for unloading, unpacking, assembly, installation, etc., as applicable in each instance.
- O. Except as otherwise defined in greater detail, term “install” is used to describe operations at project site including unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations as applicable in each instance.
- P. Except as otherwise defined in greater detail, term “provide” means furnish and install, complete and ready for intended use, as applicable in each instance.
- Q. An “Installer” is the entity, person or firm, engaged by the Contractor or his subcontractor or sub-subcontractor for the performance of a particular unit of work at the project site, including installation, erection, application and similar required operation. It is a general requirement that such installers be expert in operations they are engaged to perform.

- R. The duties and obligations of the Contract apply to this Contractor (as defined herein) regardless of similar or identical duties or obligations of other Prime Contractors related to the Project. Therefore, even though other Prime Contractors may have similar, identical or overlapping duties and obligations, each and every duty and obligation set forth in this Contract is enforceable against this Contractor.

2. BIDDER'S REPRESENTATION

- A. Each Bidder in submitting its bid represents that:

1. It has read and understands the Bidding Documents and its Bid is made in accordance therewith.
2. Contractor has visited the site; familiarized himself with the local conditions under which the work is to be performed; compared the site with drawings and specifications; satisfied himself of the conditions of delivery, handling and storage of materials and all other matters that may be incidental to the Work before submitting his Bid.
3. Its Bid is based upon the materials and equipment described within the Bidding Documents without exceptions.

B. EVIDENCE OF REPRESENTATION

1. Submission of a Bid will be considered as evidence of the bidder's representation. No allowance will subsequently be made to the successful contractor by reason of any error omission on his part, due to his neglect in complying with the requirements of this article.

3. BIDDING DOCUMENTS

A. ISSUANCE

1. The drawings and specifications of preceding bid packages may not be issued with the drawings and specifications of this bid package, but are included by reference in the Table of Contents. Contractors bidding on work in this bid package are responsible for knowing what work has preceded this bid package and how it affects its work. In order to assist contractors in this effort, the contract documents from preceding or simultaneous bid packages will be available for review at the Construction Manager's main office and job site office. Bidding documents will be available on the EDiS FTP site, bids.ediscompany.com. It is the responsibility of each Bidder to review and coordinate all Project Documents. This includes, plans, specifications and addendums. Bidding documents will be made available to qualified bidders only. Contractors are advised that no change orders will be allowed that are

based on ignorance of work assigned in preceding or simultaneous bid packages.

2. Bidding Documents will not be issued to subcontractors or other individuals or organizations who will not be contracting directly with the Owner.
3. The complete set of Bidding Documents shall be used in preparing bids; neither the Owner, the Architect nor the Construction Manager assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
4. The Owner, Architect, and the Construction Manager, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining bids on the Work and do not confer a license or grant for any other use.

B. INTERPRETATION OR CORRECTION OF BIDDING DOCUMENTS

1. Bidders shall examine the Bidding Documents carefully and shall promptly notify the Construction Manager of any ambiguity, inconsistency or error which they may discover. No request for adjustment of Contract Time or Sum shall be permitted with regard to any purported ambiguity, inconsistency or error not promptly noticed to the Construction Manager.
2. Bidders requiring clarification or interpretation of the Bidding Documents shall make a written request to the Construction Manager to reach him at least seven days prior to the date of receipt of bids.
3. Any interpretation, correction or change of the Bidding Documents will be made by Addendum. Interpretations, corrections, or changes of the Bidding Documents made in any other manner will not be binding, and Bidders shall not rely upon such interpretations, corrections, and changes.

C. SUBSTITUTIONS

1. Refer to Specification Section 016200 - MATERIAL AND EQUIPMENT.
2. Substitution requests must be made at least seven (7) days prior to the receipt of bids.

D. ADDENDA

1. Addenda will be emailed to each person or firm recorded by the Construction Manager as having received a complete set of the Bidding Documents, and will be available for inspection wherever the Bidding Documents are kept available

for that purpose.

2. Sub-Bidders, Suppliers, Manufacturers and others wishing to have Addenda mailed free of charge directly to them should address a letter to the Construction Manager requesting a listing on the Addenda mailing list for this Project. Such letter must include no other subject matter, must clearly identify this Project by name, and must indicate, line for line, exactly how the name and address is to be typed on the envelope. Phone requests will not be accepted. The Construction Manager will endeavor, but expressly does not promise, to mail Addenda directly to those who have properly requested. Such mailing list is for this one Project only.
3. Addenda issued during the time of bidding shall be listed on Bid form in the space provided. Failure of a Bidder to receive any Addendum shall not release the Bidder from any obligations under his Bid, provided said addendum was sent by fax or by U.S. Mail to the address furnished by the bidder for transmittal of mail. Faxed Addenda will be confirmed by U. S. Mail.
4. No Addenda will be issued later than two (2) days prior to the date for receipt of Bids, except an Addendum withdrawing the request for Bids or one which extends the time or changes the location for the opening of Bids.

4. BIDDING PROCEDURE

A. FORM AND STYLE OF BIDS

1. Bids shall be submitted in triplicate upon the proposal form included in these specifications, or upon an exact copy of it.
2. The Bidder shall complete all blank spaces on the Bid form.
3. Where indicated on the Bid form, sums shall be expressed in both words and figures. In case of discrepancy between the two, the written amount shall govern.
4. Any interlineation, alteration or erasure of an entry made in a blank space of the form must be initialed by the signer of the Bid. However, no interlineation, alteration or erasure shall be made in the wording printed on the bid form unless the Bidder is instructed by the Bidding Documents to do so. The Bidders shall add no stipulations or qualifications on the Bid form or accompanying the bid form unless permitted by or instructed by the Bidding Documents to do so.
5. All requested quantities, unit prices and alternates shall be included as part of the bid.

6. All signatures shall be in long hand.
7. The Bidder shall include on the Bid Form, within the Base Bid total costs associated with providing both the Labor and Material Payment and Performance Bonds.
8. The Bidder shall affix his seal to the bid form, if organized as a corporation.

B. SUBMISSION OF BIDS

1. Bids shall be deposited at the designated location prior to the time and date for receipt of Bids indicated in the Invitation to Bid, or any extension thereof made by Addendum. The time and location of the bid opening may be extended with a minimum of two (2) calendar days notice to the Bidders. Bids received after the time and date for receipt of Bids will be marked "LATE BID" and returned.
2. The Bid Proposal (3 copies) shall be enclosed in a sealed envelope. The envelope shall be addressed to the Owner, and shall be identified with the Project name, the Bidder's name and address and the Unit of Work included in the Bid.
3. If the Bidder submits his Bid by mail, he shall enclose the above described sealed envelope in a separate mailing envelope with the notation "BID ENCLOSED" on the face thereof.
4. Bids shall include a fully executed Bid Bond, Power of Attorney, Non-collusion Statement, Consent of Surety and Subcontractor listing.
5. The Bidder shall include signed Affidavit(s) for the Bidder and each listed Subcontractor certifying compliance with OMB Regulation 4104- "Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on "Large Public Works Projects."

C. MODIFICATION OR WITHDRAWAL OF BID

1. A Bidder may modify his Bid in writing at any time prior to the time scheduled for receiving Bids, provided such written modification is received by the Construction Manager prior to said time.
2. Unless specifically authorized, faxed bids will not be considered.
3. No Bidder shall modify, withdraw or cancel his Bid or any part thereof for NINETY (90) days after the time designed for the receipt of Bids, in the Invitation to Bid. Any further extension of the time will be by mutual consent of the Owner and the Contractor.

4. A Bid may be withdrawn up until the time scheduled for receiving the Bids. Such withdrawal shall be in writing.

5. CONSIDERATIONS OF BIDS

A. OPENING OF BIDS

1. Bid shall be publicly opened and read aloud.

B. REJECTION OF BIDS

1. The Owner, in its sole discretion, shall have the right to reject any or all bids for any reason or for no reason whatsoever.

C. ACCEPTANCE OF BIDS

1. The Owner, in its sole discretion, shall have the right to waive any informality or irregularity in any Bid received.
2. The Owner shall have the right to accept Alternates in any order or combination.

6. SUBCONTRACT INFORMATION

A. SUBMISSION OF SUBCONTRACTOR LIST

1. Should the Contractor fail to utilize any or all of the Subcontractors in the Contractor's Bid statement in the performance of the Work on the public bidding, the Contractor shall be penalized in the amount of (project specific amount \*). The Agency may determine to deduct payment of the penalty from the Contractor or have the amount paid directly to the Agency. Any penalty amount assessed against the Contractor may be remitted or refunded, in whole or in part, by the Agency awarding the Contract, only if it is established to the satisfaction of the Agency that the Subcontractor in question has defaulted or is no longer engaged in such business. No claim for the remission or refund of any penalty shall be granted unless an application is filed within one year after the liability of the successful Bidder accrues. All penalty amounts assessed and not refunded or remitted to the Contractor shall be reverted to the State.

\* one (1) percent of the contract amount not to exceed \$10,000.

2. Upon request of the Construction Manager, the Bidder shall within seven (7) days of the request submit a list of the other subcontractors or other persons or organizations (including those who are to furnish materials or equipment fabricated to a special design) if any, proposed for the various portions of the Work not included in the subcontractors list submitted with the bid.



3. The Bidder will be required to establish to the satisfaction of the Construction Manager the capability and experience of all proposed subcontractors to furnish and perform the work described in the sections of the specifications pertaining to such proposed subcontractor's respective trades.
4. Subcontractors and other persons and organizations proposed by the Bidder and accepted by the Owner must be used on the work for which they were proposed and accepted, and shall not be changed except with the written approval of the Construction Manager.

7. EQUALITY OF EMPLOYMENT OPPORTUNITY ON PUBLIC WORKS

During the performance of this Contract, the Contractor agrees as follows:

- A. The Contractor will not discriminate against any employee or applicant for employment because of race, creed, color, sex or national origin. The Contractor will take affirmative action to ensure the applicants are employed, and that employees are treated during employment, without regard to their race, creed, color, sex or national origin. Such action shall include, but not be limited to, the following: Employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training including apprenticeship. The Contractor agrees to post in conspicuous places available to employees and applicants for employment notices to be provided by the contracting agency setting forth this nondiscrimination clause.
- B. The Contractor will, in all solicitants or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, color sex, or national origin.
- C. The term "Contract for public works" means construction, reconstruction, demolition, alteration and repair work and maintenance work paid for, in whole or in part, with public funds.
- D. The Secretary of the Department of Labor shall be responsible for the administration of this section and shall adopt such rules and regulations and issue such orders as he deems necessary to achieve the purpose thereof, provided that no requirement established hereby shall be in conflict with subchapter 6904 of this title.

8. PREVAILING WAGE REQUIREMENT

- A. Wage Provisions: In accordance with Delaware Code, Title 29, Section 6960, renovation projects whose total cost shall exceed \$45,000 and \$500,000 for new

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construction, the minimum wage rates for various classes of laborers and mechanics shall be as determined by the Department of Labor, Division of Industrial Affairs of the State of Delaware.

- B. The prevailing wage shall be the wage paid to a majority of employees performing similar work as reported in the Department's annual prevailing wage survey or in the absence of a majority, the average paid to all employees reported.
- C. The Contractor shall pay all mechanics and labors employed directly upon the site of work, unconditionally and not less often than once a week and without subsequent deduction or rebate on any account the full amounts accrued at time of payment, computed at wage rates not less than those stated in the specifications, regardless of any contractual relationship which may be alleged to exist between the employer and such laborers and mechanics.
- D. The scale of the wages to be paid shall be posted by the employer in a prominent and easily accessible place at the site of the work.
- E. Every contract based upon these specifications shall contain a stipulation that certified sworn payroll reports be maintained by every Contractor and Subcontractor performing work upon the site of construction. The Contractor and Subcontractor shall keep and maintain the sworn payroll information for a period of 2 years from the last day of the work week covered by the payroll. A certified copy of these payroll reports shall be made available: 1) Effective June 30, 2007, all Contractors performing work on public work projects are required to furnish sworn payroll records on a weekly basis to the Department of Labor. Specifically, 29 Del. C. § 6960(c) states that "every contract... shall contain a stipulation that sworn payroll information, as required by the Department of Labor, be furnished weekly." Further, that "the Department of Labor shall keep and maintain the sworn payroll information for a period of 6 months from the last day of the work week covered by the payroll." Lastly, the failure to submit payroll reports shall be subject to a civil penalty of not less than \$1,000 nor more than \$5,000 for each violation. 29 Del. C. § 6960(e). Sworn payroll information shall consist of a fully completed and notarized report on a form provided upon request by the Department of Labor. See Delaware Prevailing Wage Regulations VII A.2(c)"; 2) upon request by the public or for copies thereof. However, a request by the public must be made through the Department of Labor. The requesting party shall, prior to being provided the records, reimburse the costs of preparation by the Department of Labor in accordance with the Department's copying fee policy. The public shall not be given access to the records at the principal office of the Contractor or Subcontractor; and 3) the certified payroll records shall be on a form provided by the Department of Labor or shall contain the same information as the form provided by the Department and shall be provided within 10 days from receipt of notice requesting the records from the Department of Labor.

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9. PERFORMANCE AND PAYMENT BONDS

- A. The Contractor shall be required to furnish bonds covering the faithful performance of the contract and the payment of all obligations arising thereunder with such sureties secured through the Bidder's usual sources as may be agreeable to the parties. The Owner, **Appoquinimink School District**, shall be noted as the obligee.
- B. The performance and payment bonds shall each be in an amount equal to 100% of the Contract Sum as adjusted from time to time. The Owner, **Appoquinimink School District**, shall be noted as the obligee.

C. TIME OF DELIVERY AND FORM OF BONDS

- 1. The Bidder shall deliver the required bonds within seven (7) days from receipt of request from the Construction Manager.
- 2. The performance and payment bonds shall be written in the form found in Section 006113 Performance and Payment Bonds.
- 3. The required bonds shall be by an authorized agent of the bonding company and shall be accompanied by a certified and current copy of the bonding agent's Power of Attorney, indicating the monetary limit of such power. The bonding company shall be licensed to operate in the state which the work is to be performed.

10. EXECUTION OF AGREEMENT

- A. The Agreement will be written on a contract form, stipulated by the Owner, a copy of which is included in the Specifications.
- B. The Bidder shall, within seven (7) days following its presentation, execute the Agreement and return it to the Construction Manager.
- C. The Bidder agrees to commence work within seven (7) days of 1) execution of the Agreement, or 2) receipt of a Letter of Intent to execute the Agreement, or other authorization to proceed, if furnished at an earlier date.
- D. The Bidder shall provide two (2) business days prior to contract execution, copies of the Employee Drug Testing Program for the Bidder and all listed Subcontractors.
- E. If the successful Bidder fails to execute the required Contract and Bond, as aforesaid, within twenty (20) days after the date of official Notice of the Award of the Contract, their Bid guaranty shall immediately be taken and become the property of the State for the benefit of the Agency as liquidated damages, and not as a forfeiture or as a penalty. Award will then be made to the next lowest qualified Bidder of the Work or re-

advertised, as the Agency may decide.

11. GENERAL COMMENTS

A. JOINT VENTURE AGREEMENTS

In the event of a mandatory pre-bid meeting, representatives of both Joint Ventures must attend the pre-bid meeting and must be an officer and co-joint venture of the corporations involved.

Each Joint Venture shall be qualified and capable to complete the project with their own forces.

Included with the bid submission, and as a requirement to bid, a copy of the executed Joint Venture Agreement shall be submitted and signed by all Joint Ventures involved.

All required bid bonds, performance bonds, material and labor payment bonds must be executed by both Joint Ventures and be placed in both of their names.

All required insurance certificates shall name both Joint Ventures.

Both Joint Ventures shall sign the bid form and shall submit a valid Delaware Business License with their bid.

Both Joint Ventures shall include their Federal E. I. Number with the bid.

Due to exceptional circumstances and for good cause shown, one or more of these provisions may be waived at the discretion of the Owner.

B. BUSINESS LICENSES FOR SUBCONTRACTORS

The successful Bidder shall provide to the agency to which it is contracting, within 30 days of entering into such public works contract, copies of all Delaware Business licenses and taxpayer identification number (i.e. federal employer identification number or social security number) of subcontractors and/or independent contractors that will perform work for such public works contract. However, if a subcontractor or independent contractor is hired or contracted more than 20 days after the Bidder entered the public works contract the Delaware Business license of such subcontractor or independent contractor shall be provided to the agency within 10 days of being contracted or hired.

C. BONDING REQUIREMENTS FOR NON-RESIDENT CONTRACTORS

All non-resident contractors are reminded that they must supply a surety or cash bond to the Division of Revenue equal to six percent (6%) of the total of all contracts exceeding \$20,000 for construction within this state. For Division of Revenue

purposes, cash bonds and bank letters of credit issued by financial institutions will be accepted on all contracts.

D. CONTRACT AWARD TO NON-RESIDENT CONTRACTORS

Every architect, or professional engineer or contractor or construction manager engaging in the practice of such profession shall furnish the Department of Finance within 10 days after entering into any contract with a contractor or subcontractor not a resident of this State, a statement of the total value of such contract or contracts together with the names and addresses of the contracting parties.

E. STATE LICENSE AND TAX REQUIREMENTS

The Contractor and Subcontractor shall be licensed to do business in the State of Delaware and shall pay all fees and taxes due under State laws. In conformance with Section 2503, Chapter 25, Title 30, Delaware Code, "the Contractor shall furnish the State Tax Department within ten (10) days after award of the Contract, a statement of the total values of each contract and subcontract, together with the names and addresses of the contracting parties . . ." This project is located within New Castle County, Delaware. All Contractors are required to submit a copy of their New Castle County business license to the Construction Manager.

F. RIGHT TO AUDIT RECORDS

The Owner (contracting agency) shall have the right to audit the books and records of a Contractor or any Subcontractor under any Contract or Subcontract to the extent that the books and records relate to the performance of the Contract or Subcontract.

Said books and records shall be maintained by the Contractor for a period of three (3) years from the date of final payment under the Prime Contract and by the Subcontractor for a period of three (3) years from the date of final payment under the Subcontract.

G. PREFERENCE FOR DELAWARE LABOR

In the construction of all public works for the State or any political subdivision thereof or by firms contracting with the State or any political subdivision thereof, preference in employment of laborers, workers or mechanics shall be given to bona fide legal citizens of the State who have established citizenship by residence of at least 90 days in the State. Each public works contract for the construction of public works for the State or any political subdivision thereof shall contain a stipulation that any persons, company or corporation who violates this section shall pay a penalty to the Secretary of Finance equal to the amount of compensation paid to any person in violation of this section.

END OF SECTION

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SECTION 003132 – GEOTECHNICAL DATA

1. GENERAL

A. Owner's Disclaimer

1. Site Information: Data on subsurface conditions are made available in the Bidding Documents as a convenience to Bidders and the Contractor. They are not intended as representations or warrants of continuity of such conditions between soil borings. It shall be expressly understood that the Owner will not be responsible for interpretations or conclusions drawn there from by the Contractor. Additional test borings and other exploratory operations may be made by the Contractor at no additional cost to the Owner, provided such operations are acceptable to the Architect and Construction Manager.

B. SOIL BORING DATA

1. Boring logs and location plans are available for review at Construction Manager's office. All Contractors are strongly urged to review this information. EDIS will provide electronic copies of the Geotechnical Report at no cost to any Contractor who requests the report. To request a copy of the report, Contractors shall contact **Andrew Hickey, EDIS Company at [ahickey@ediscompany.com](mailto:ahickey@ediscompany.com)**.
2. Geo-Tech reports included are as follows:
  - a. Duffield Associated Preliminary Geotechnical Evaluation Report dated July 2010.
  - b. Duffield Associates Surcharge Fill Material Summary Geotechnical Evaluation Report dated January 5, 2017.
  - c. Duffield Associates On-Site Fill Source Review Geotechnical Evaluation Report dated January 25, 2017.
  - d. Duffield Associates Geotechnical Evaluation dated March 14, 2017.

END OF SECTION



**PRELIMINARY  
GEOTECHNICAL EVALUATION**

**APPOQUINIMINK SCHOOL DISTRICT  
PROPOSED ODESSA CAMPUS – PHASE I  
ODESSA, DELAWARE**

July 2010

Prepared for:

Appoquinimink School District  
118 South Sixth Street  
Odessa, Delaware 19730

Prepared by:

Duffield Associates, Inc.  
Consultants in the Geosciences  
5400 Limestone Road  
Wilmington, Delaware 19808-1232

A handwritten signature in black ink, appearing to read "Brian J. Devine", written over a horizontal line.

Brian J. Devine, P.E.  
Geotechnical Engineer

A handwritten signature in black ink, appearing to read "Stacy B. Ziegler", written over a horizontal line.

Stacy B. Ziegler, P.E., LEED AP  
Senior Geotechnical Engineer

Project No. 3975.GC

Printed on Recycled Stock



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## EXECUTIVE SUMMARY

This report summarizes Duffield Associates, Inc.'s geotechnical evaluation for the for Phase 1 of the proposed school campus to be constructed off of Old State Road in Odessa, Delaware. Based on the information provided, the school campus is to be located on an approximately 270-acre parcel located west of Old State Road in Odessa, Delaware. The campus is proposed to be constructed in several phases. As part of the initial phase, the southeastern portion of the site will be developed, including an Early Childhood Center building and an Elementary School building. In addition to the two (2) structures, several ancillary structures and associated driveways and parking lots are to be constructed in Phase 1. Future construction is proposed to include a new middle school and high school buildings, as well as additional site features such as athletic fields, a stadium, and additional parking.

A field program consisting of 42 Standard Penetration Test borings (SPT, performed in general accordance with ASTM D 1586) and 15 test pits were performed between May 28, 2010 and June 7, 2010. Beneath a surface stratum of topsoil, the soil conditions observed in the test borings and test pits generally consisted of a medium to stiff silts interlayered with medium dense silty sands, overlying soft to medium consistency sandy silt soils. These strata were generally underlain by very soft to medium consistency clay soils. In several of the deeper borings, this clay stratum was observed to be underlain by medium to dense sands. Groundwater was encountered in five (5) of the test borings performed as part of the geotechnical evaluation, at depths ranging from 10 to 18.5 feet below the existing ground surface corresponding to an elevation range of approximately 9.5 to 42 feet, project datum; however, no groundwater was encountered in a majority of test borings terminated at or below these elevations.

The soils observed throughout most of the proposed campus consist of a relatively thin layer of interlayered silts, clays and sands, overlying a typically 10- to 20-foot-thick layer of soft, compressible, high plasticity silt and clay soils. This soil profile poses a challenge for construction at the site, as the soft silt/clay soils are compressible and will exhibit settlement under additional loading. These subsurface conditions are not typical to the Middletown-Odessa area.

Several foundation options, as well as possible approaches for site improvements, are discussed in this report. The selection of the foundation option for each structure should be made based on the risk tolerance of the Owner to settlement, the construction and possible maintenance costs of the option, and the structural feasibility the option for each of the various structures proposed for the site. These options include conventional spread footing foundations, mat foundations, deep foundations, and possible surcharging of the site. The selection of a system for support of the slab-on-grade will also be necessary based on the foundation system selected and the anticipated building loads.

Additional laboratory testing and a field surcharge test are being considered by the project team, to further evaluate the compressibility of the site soils, and to assist in further evaluation and selection of a foundation system for each of the proposed structures at the site.



## I. INTRODUCTION

This report summarizes Duffield Associate's (Duffield Associates) geotechnical evaluation for Phase 1 of the proposed school campus to be constructed off of Old State Road in Odessa, Delaware. Included in this report is a summary of the data obtained during field and laboratory testing programs and a discussion of the subsequent geotechnical analysis. Recommendations for the design and construction of the proposed Phase I building foundations and slabs-on-grade are also provided, as well as a discussion of the future site development. These services were provided in general accordance with an agreement dated May 7, 2010 (authorized to proceed by Appoquinimink School District on May 12, 2010).

To assist with this evaluation, Duffield Associates was provided with a site plan indicating the proposed layout of the school campus including the location of four (4) school structures, parking, ancillary buildings, and athletic fields. The site plan was prepared by Landmark Engineering, and was provided to Duffield Associates via electronic mail on May 17, 2010. In addition, Duffield Associates has attended several project meetings where details related to the proposed building types and construction phasing were discussed.

Based on the information provided, it is proposed to construct a school campus on an approximately 270-acre parcel located west of Old State Road in Odessa, Delaware. The campus is proposed to be constructed in several phases. As part of the initial phase, the southeastern portion of the site will be developed, including an Early Childhood Center building and an Elementary School building. In addition to the two (2) structures, several ancillary structures and associated driveways and parking lots are to be constructed in Phase 1. Future construction is proposed to include a new middle school and high school buildings, as well as additional site features such as athletic fields, a stadium, and additional parking.

At this time, the proposed Phase 1 development is in a conceptual planning stage. The Early Childhood Center is currently proposed to be a single-story structure, covering a footprint of approximately 26,000 square feet in the southern corner of the site adjacent to Old State Road with parking proposed to the west of the building. The Elementary School is to be located to the northwest of the Early Childhood Center, and is proposed to be a two-story building covering an approximate footprint of 85,000 square feet. Based on preliminary grading provided, it is understood that that cuts of several feet and minimal to no fills are generally required for the proposed Phase 1 building construction and that cuts and fills of several feet may be required for the future building phases. No structural loading information was yet available at the time of this report.

The 270-acre site is currently agricultural fields, surrounded by a line of woods. The site is bounded to the east by Old State Road. Existing residential subdivisions are located immediately to the south and north of the site. The site is bounded on the northwest corner by the Appoquinimink River. Based on available mapping information, the site



appears to slope downwards towards the north and west, with a grade differential of approximately 20 feet across the cleared part of the site. A site location sketch indicating the existing conditions and the proposed school building location is enclosed in Appendix A of this report.

No site utilities were delineated by Miss Utility of Delaware within the vicinity of the proposed buildings.

An infiltration evaluation was performed at the site concurrent with the geotechnical evaluation. The results of the testing are summarized in a separate report prepared by Duffield Associates, dated July 12, 2010.

## II. FIELD AND LABORATORY TESTING PROGRAMS

### A. STANDARD PENETRATION TEST BORINGS

Forty-two (42) Standard Penetration Test borings (SPT, performed in general accordance with ASTM D 1586) were performed between May 28 and June 7, 2010. Test borings were performed throughout the site, with a focus of borings on the Phase 1 portion of the site, which includes the Early Childhood Center, the Elementary School Building, the Maintenance Building, and surrounding infrastructure. A limited number of borings were performed in the future phase areas of the site, including the Middle School, High School, and Stadium to obtain information in these area to assess the consistency of the subsurface conditions across the site, and to review soils to be utilized in regrading of the site during Phases 1 and 2.

The test borings were extended to depths ranging from approximately 10 to 35 feet below the existing ground surface. The locations of the test borings were estimated by Duffield Associates' representative utilizing a hand-held GPS device. The test boring locations and the preliminary building layout are indicated on the location sketch enclosed with this report in Appendix A. The test borings were located as follows:

Location	Test Boring Numbers
Early Childhood Center Building Area	TB-1 through TB-5 and TB-23
Elementary School Building Area	TB-6 through TB-11 and TB-24
Driveway Areas	P-1 through P-13
Maintenance Building	TB-12 and TB-13
Future Phase Building Areas	TB-14 through TB-20 and TB-2 through TB-29
Athletic Stadium Field	TB-21 and TB-22



The test borings were performed by Feldmann Brothers, Inc. of Newark, Delaware, under subcontract to Duffield Associates, utilizing an ATV-mounted Diedrich D-50 drill rig with hollow stem augers. Duffield Associates' representative was present to review the performance of the test borings. Test boring logs, which describe the conditions observed during the field exploration program, are enclosed in Appendix B of this report. At completion of the drilling, the boreholes were backfilled with the soil cuttings. Excess soil was mounded above each location to compensate for potential future settlement of the boring backfill. Further restoration of the borehole locations was beyond the scope of work performed for this geotechnical evaluation. However, additional settlement of the materials backfilled in the boreholes may occur, resulting in a depression or hole in the ground surface. Consequently, future maintenance and restoration of the site may be required.

#### B. BACKHOE EXCAVATED TEST PITS

This evaluation also included the performance of 15 test pits performed between June 8 to 15, 2010. The test pits designated as IT-1 through IT-13, TP-1 and TP-2, were performed by Feldmann Brothers, Inc. of Newark, Delaware, as a subcontractor to Duffield Associates, utilizing a rubber-tired backhoe.

The test pits were extended to depths of up to 12 feet below the existing ground surface. The approximate locations of test pits are indicated on the test boring and test pit location sketch included in Appendix A of this report. The test pit locations were estimated by Duffield Associates' representative utilizing a hand-held GPS device.

Duffield Associates' representative was present to review the performance of the test pits. Test pit logs, which describe the conditions observed during the field exploration program, are included in Appendix C. In each of the test pits a single-ring infiltration test was performed. Information related to the infiltration testing has been summarized in a separate report. At completion of the test pits, the excavations were backfilled with the excavated material in approximately 1-foot-thick lifts and compacted utilizing the excavator bucket. The contractor leveled the areas in which the test pits were performed to be consistent with the existing ground surface. Settlement and softening of soils replaced in the test pits may occur, resulting in a depression or holes in the ground surface. Consequently, future maintenance and restoration of the site may be required.

#### C. LABORATORY TESTING

Following completion of the field program, soil samples were returned to Duffield Associates' laboratory for testing of selected samples. The laboratory testing program for this evaluation included the determination of natural water



content (ASTM D 2216) and silt/clay content in accordance with the United Soil Classification System (percent finer than a No. 200 sieve, ASTM D 1140) for a total of 40 soil samples obtained during the field evaluation. The laboratory testing program also included the determination of percent finer than a No. 270 sieve [silt/clay content in accordance with the United States Department of Agriculture (USDA) classification system] for 13 soils samples from the proposed stormwater management areas. In addition, four (4) samples were selected for Atterberg Limits determination (ASTM D 4318) and two (2) consolidation tests (ASTM D 2435) where performed on "undisturbed" Shelby tube samples obtained during the drilling program. The results of these laboratory tests are included on the test boring and test pit logs in Appendices B and C of this report, and the consolidation test reports are included as Appendix E.

No environmental characterization of the soils was performed as part of this evaluation.

#### D. TOPSOIL SAMPLING AND TESTING

A total of 20 topsoil samples were collected by Duffield Associates' representative throughout the site. The topsoil sample collection points are noted on the test boring location sketch in Appendix A. Each topsoil sample was collected from the upper 4 to 6 inches of the soil stratum.

Laboratory testing was performed on the topsoil samples by the University of Delaware's Soils Testing Laboratory, as a subcontractor to Duffield Associates. This laboratory testing included the determination of the organic matter and pH, as well as various soil nutrients. The results of the topsoil testing are included in Appendix F of this report.

### III. SUBSURFACE CONDITIONS

#### A. GENERALIZED SITE GEOLOGY

This site is located within the Atlantic Coastal Plain Physiographic Province. Based on data from the Delaware Geological Survey (DGS), the site is generally underlain by the highly glauconitic sands of the Vincentown Formation of the Paleocene Era, with the eastern edge of the site mapped to be within the Calvert Formation of the Miocene Era, described as silt with some fine sand and shell beds, overlying the Vincentown Formation.

Based on the DGS mapping, the depth to weathered bedrock in the general area of the site is estimated to be on the order of 1,400 to 1,600 feet below existing grade.



## B. STRATIGRAPHIC CONDITIONS

Beneath a surface stratum of topsoil, the soil conditions observed in the test borings and test pits generally consisted of a medium to stiff silts interlayered with medium dense silty sands, overlying soft to medium consistency sandy silt soils. These strata were generally underlain by very soft to medium consistency clay soils. In several of the deeper borings, this clay stratum was observed to be underlain by medium to dense sands.

Stratigraphic profiles depicting the subsurface conditions at the Early Childhood Center site and the Elementary School site are included in Appendix D of this report. For discussion purposes, subsurface conditions encountered in the building areas can be further described as follows:

SUBSURFACE STRATUM	APPROXIMATE THICKNESS (FT.)	GENERALIZED DESCRIPTION <sup>[1]</sup>
A	0.5 – 0.7	TOPSOIL
B1 <sup>[2]</sup>	2 - 7	Varicolored (red/ yellow/ brown/ orange/ gray) silty clay/ clayey silt, trace to some sand (soft to stiff consistency) USCS: ML, CL <i>(Interlayered with Stratum B2)</i>
B2 <sup>[3]</sup>	1 – 10	Brown/red/ yellow fine to medium SAND, trace to 'and' silt, trace to little clay (loose to medium density); USCS: SM, SC
C	-- <sup>[4]</sup>	Brown/red fine to coarse SAND, little to trace silt (medium density); USCS: SM
D	9 -- <sup>[5]</sup>	Gray/ brown/ purplish gray/ black silty CLAY/ clayey SILT, trace to little sand (very soft to stiff consistency); USCS: CL, CH, MH
E	-- <sup>[6]</sup>	Varicolored (Green/ gray/ brown/ white/ orange) fine to medium SAND, little to 'and' silt, trace gravel, (dry to moist, medium to very dense); USCS: SM
NOTES: 1. The soil descriptions utilized herein and on the test boring logs are defined in the General Notes in Appendix G. 2. Stratum B1 observed in borings TB-1, TB-7, TB-9 to TB-14, and TB-16 to TB-24. 3. Stratum B2 observed in borings TB-2 to TB-4, TB-6, TB-13, TB-15, TB-18, TB-20, and TB-23. 4. Stratum C observed in borings TB-12 and TB-13, and not fully penetrated. 5. Stratum D not observed in borings TB-12 and TB-13. Stratum D not fully penetrated in borings TB-1 to TB-3, TB-7, TB-9, TB-15, TB-16 to TB-20, and TB-25. 6. Stratum E only encountered in borings TB-4 to TB-6, TB-8, TB-10, TB-11, TB-14, TB-21 to TB-24, TB-26, and TB-27. Stratum E not fully penetrated.		



The soils encountered during the performance of the test borings generally appeared to be natural and undisturbed. Topsoil and soils containing organic matter were observed in all of the test borings to depths of approximately 5 to 7 inches below the existing ground surface. However, due to the former use of the site for agricultural purposes, localized areas of greater thickness of topsoil or organic containing materials will likely be observed at the site. No miscellaneous fill materials were observed during the field testing program, although localized areas of disturbed soils and fills are likely present due to the previous site usage.

Groundwater was encountered in five (5) of the test borings performed as part of the geotechnical evaluation, at depths ranging from 10 to 18.5 feet below the existing ground surface corresponding to an elevation range of approximately 9.5 to 42 feet, project datum; however, no groundwater was encountered in a majority of test borings terminated at or below these elevations.

#### IV. DISCUSSION OF ANALYSIS

The soils observed throughout most of the proposed campus consist of a relatively thin layer of interlayered silts, clays and sands, overlying a typically 10- to 20-foot-thick layer of soft, compressible, high plasticity silt and clay soils. This soil profile poses a challenge for construction at the site, as the soils are compressible and will exhibit settlement under additional loading. These subsurface conditions are not typical to the Middletown- Odessa area.

Consolidation testing was performed on several undisturbed soil samples obtained from the stratum of compressible soils at the site (Stratum D). The purpose of this testing was to evaluate the magnitude of consolidation settlement that would occur under variable loading conditions, as well as to evaluate the loading history of the soil over geologic time. In general, silt and clay soils will exhibit a small percent of vertical consolidation (e.g., settlement) under applied loads that are less than the maximum load (i.e., the "preconsolidation pressure") that the soil has seen over geologic time. A much greater percent of vertical consolidation will occur when the soil is loaded with a stress that exceeds the previous loading conditions. Therefore, if the loads resulting from the proposed campus construction (i.e., loads due to regrading, building loads and pavement loads) are less than what the soil has previously encountered, the resulting settlement will be relatively small, and likely within the tolerance of typical building construction. However, if the new loads exceed that which the site soils have historically encountered (i.e., exceed the preconsolidation pressure), excessive settlements (e.g., several inches to a foot) are expected to occur.

Based on the testing performed, the "preconsolidation pressure" of the silt and clay soils of Stratum D is at the upper end of the range of pressures or applied loads that the new construction is expected to place on these soils. If practical, it is desired to maintain the total load on the compressible Stratum D soils below the "preconsolidation pressure." Therefore, it is important to carefully select a foundation system for each proposed





structure based on the loading conditions of that building. Several foundation options, as well as possible approaches for site improvements, are discussed further below. The selection of the foundation option for each structure should be made based on the risk tolerance of the Owner to settlement, the construction and possible maintenance costs of the option, and the structural feasibility the option for each of the various structures proposed for the site.

#### A. SHALLOW FOUNDATION SYSTEM

A shallow foundation system is typically the most cost effective foundation system for a structure. However, at this site, due to the soil conditions present as described above, a shallow foundation system may not be feasible for the proposed school buildings due to excessive settlement magnitudes that could result from the foundation loading over the compressible site soils. Analysis indicates that a typical 3,000 psf foundation bearing pressure could result in 4 to 8 inches of foundation settlement. This is not within a tolerable range for most structures. A lower bearing capacity could result in lesser settlements. However, the actual magnitude of settlement is dependent upon the preconsolidation pressure of the site soils, as described above. If the foundation loading is kept below the preconsolidation pressure, then the foundation settlement would be less.

Further analysis of the site soils through additional laboratory consolidation testing and through field monitoring of a test surcharge pile placed at the site has been recommended to the project team, to allow further analysis of the in-situ condition and assist with recommending a suitable bearing capacity for a spread foundation system to the design team. It is anticipated that an allowable bearing capacity of 1,000 to 1,500 psf will be recommended based on this additional testing and analysis.

The compressible soil stratum was not observed in test borings TB-12 and TB-13 performed in the vicinity of the proposed maintenance building. These are the only borings on site where this material was not observed. The soils observed in these test borings are suitable for support of a spread foundation system. A maximum allowable bearing pressure of 2,500 psf is recommended for design of spread footing system in this area of the site.

#### B. MAT FOUNDATION

When a low bearing pressure is utilized, shallow foundations can become large. Typically, once foundation sizes increase to be the equivalent of  $\frac{1}{2}$  of the building area, it becomes more cost effective to construct a mat foundation. A mat foundation consists of a reinforced concrete slab that is designed to distribute the proposed superstructure's loading over the entire building area. The top of the foundation could be finished to function as the floor slab. Due to their ability to



redistribute loads, a mat foundation could result in reduced differential settlement magnitudes relative to a conventional shallow foundation. Economy is typically achieved through savings in excavation and labor costs relative to a large number of individual foundations, which can offset the increased volume of concrete. However, depending on the amount of reinforcing steel and concrete required to construct a mat, other foundation types may be considered more cost effective.

As an alternative to a mat foundation beneath the entire building footprint, a series of strip footings that connect several column or wall foundations into a single spread foundation could also be considered. This system is also sometimes called a strap foundation or grade beam system. Consideration of the slab-on-grade loads and potential slab settlement would need to be carefully considered when following this approach.

The additional field and laboratory testing discussed above will be helpful in selection of an appropriate bearing capacity for a mat foundation that will limit total and differential settlement to within an acceptable range. It is anticipated that a maximum average contact pressure on the order of 750 to 1,000 psf will be recommended for a mat foundation in order to minimize the risk of excessive settlement. Additional recommendations regarding mat foundation settlements can be provided following the completion of the additional field testing as described above.

#### C. DEEP FOUNDATIONS

Where spread footings result in significant settlement, or the building loads are such that a low bearing pressure footings result in large foundation sizes, a deep foundation system should be considered. A deep foundation system would be founded in the sand soils (Stratum E) below the compressible clay stratum, such that the building loads (i.e., the superstructure and possibly the slab if it were pile supported as well) are transferred to the underlying sand soils which are less compressible. The resulting structure would experience minimal settlement.

Based on the conditions encountered at the site, it is Duffield Associates' opinion that several deep foundation systems could be considered for this project. A deep foundation system would derive its support from a combination of frictional resistance and end bearing on the denser sand soils (Stratum E) encountered beneath the soft soil strata. Due to their variable depth and consistency, the frictional resistance from Strata B and D were not considered in this analysis.

Several types of deep foundation systems considered for this site are discussed further below:



- **Timber Piles.** Timber piles are often considered an economical type of pile; however, the capacity that can be achieved with this type of pile is limited by the maximum available timber pile length (typically 55 feet). Splicing of timber piles can be done, but is frequently not effective. Therefore, the number of timber piles required is significantly more than if a higher capacity pile were utilized (as discussed further below).

Analysis indicates that a nominal 12-inch-diameter timber pile system could be driven to obtain an allowable pile capacity of approximately 25 tons per pile at a depth of approximately 40 feet below the existing grade (i.e., with penetration of 12 to 20 feet into the sand stratum). This analysis is based on a factor of safety of 2.5, and an additional capacity of 4 tons per pile in consideration of "negative skin friction" (or the downward force on the piles, which will result from settlement of the Stratum D soils).

- **Closed End Pipe Piles (Concrete filled).** Steel piles that can be spliced together to achieve longer lengths than a timber pile will result in a higher capacity per pile. For example, steel pipe piles can be readily spliced and can be driven by most regional pile contractors. Pipe piles have the advantage of allowing the visual review of the pile conditions after driving, by using a light or a mirror to view the length of the pile. The principal disadvantage of this type of pile is that it generally creates more displacement during driving than other pile types (such as H-piles or open ended pipe piles), which may cause some difficulty in penetrating denser portions of the residual soils. This can also result in "sweeps" or variations in plumbness when harder driving conditions are encountered that can limit the structural capacity of the "swept" pile.

Analysis indicates that a nominal 12-inch diameter pipe pile system could be driven to obtain an allowable pile capacity of approximately 40 tons per pile at a depth of approximately 60 feet below the existing grade. This analysis is based on a factor of safety of 2.5, and an additional capacity of 4 tons per pile in consideration of "negative skin friction" (or the downward force on the piles, which will result from settlement of the Stratum D soils).

- **Auger Cast Piles.** An auger cast pile system consists of small diameter piles drilled to a specified depth and pumped full with cementitious grout. Auger cast piles are typically a good foundation choice for installation in areas where vibrations are a concern, because this method results in relatively minor vibration disturbance during construction. A disadvantage of utilizing auger cast piles is that the capacity of the shaft is based on empirical methods and cannot be easily verified in the field through monitoring during construction without the performance of a load test, which can be costly. In addition, the soil cuttings generated during the construction of the auger piles may require off-site disposal.



Analysis indicates that a nominal 12-inch-diameter auger cast pile could be installed to obtain an allowable pile capacity of approximately 20 tons per pile at a depth of approximately 40 feet below the existing grade, and an allowable capacity of 25 tons per pile at a depth of 60 feet below existing grade. This analysis is based on a factor of safety of 2.5, and an additional capacity of 4 tons per pile in consideration of "negative skin friction" (or the downward force on the piles, which will result from settlement of the Stratum D soils).

Duffield Associates can provide additional pile capacity estimates and recommendations for various pile sizes upon request. Settlement magnitudes for driven piles bearing on medium to dense sand soils will principally consist of elastic shortening of the piles and should be on the order of 1 inch or less.

It is noted that "static" methods of pile analysis used to estimate pile capacity and length are approximate, and based on various assumptions regarding the soil conditions. The actual pile lengths may vary somewhat in the field due to variations in the subsurface conditions, and the final pile length should be determined based on penetration resistance observed during pile installation.

If driven piles are utilized, the contractor should submit a wave equation analysis demonstrating that the proposed pile driving system is capable of installing piles of the required capacity without damaging the piles. It is recommended that the Pile Driving Analyzer (PDA) be utilized during the installation of probe piles at the site to verify hammer efficiency and evaluate pile capacity (which can be estimated using the PDA). The PDA can also be utilized later during production driving (if necessary) to help resolve issues regarding hammer performance, driving stresses in the pile, and pile capacity. Provisions for the use of the PDA should be included in the contract documents.

#### D. SURCHARGING FOR GROUND IMPROVEMENT

Preloading or surcharging of a soil stratum is a method often used to greatly reduce post-construction settlement. In a surcharge, a load is induced on the soil stratum by stockpiling soil materials over an area where future building loads are intended. The soil stockpile is left in place for a period of time until the desired degree of settlement is completed. Then the surcharge stockpile is removed and the building is constructed typically utilizing a shallow foundation or mat foundation system, as described above. With a properly designed and implemented surcharging approach, the resulting post-construction settlement of the shallow foundation supported structure will be within acceptable tolerances (i.e., generally 1 inch or less).



A surcharge is typically designed based on the consolidation characteristics of the underlying soil, the time available for the surcharging period, the anticipated structural loads, and the anticipated acceptable post-construction settlement of the structure.

If on-site soils were utilized for surcharging materials (i.e., such as the material that is planned to be bulk excavated from the stadium area), it is recommended that a unit weight of 120 pounds per cubic foot be assumed for this material placed in a surcharge pile. Therefore, for example, in order to achieve a surcharge pressure equivalent to 1,500 psf, a stockpile height of 12.5 feet over the entire building area would be required. Generally, surcharge materials are placed in 12- to 18-inch-loose lifts and nominally compacted with a roller in order to maintain a stable pile.

For the soils at this site, the laboratory consolidation testing indicates that the consolidation settlement will happen relatively quickly. For example, it is estimated that 90% of the anticipated primary consolidation settlement will be completed within 3 to 5 months. It is generally recommended that multiple settlement plates (e.g., 18 inches x 18 inches steel plate with 1- to 2-inch-diameter steel riser pipe) be installed at the base of the surcharge pile so that the progress of the settlement can be mapped through routine surveying of the settlement plate elevation.

#### E. OTHER STRUCTURAL CONSIDERATIONS

In addition to the foundation options considered above, several other approaches could be considered, as follows:

- **Basement Excavation.** Excavation of a basement over the entire building footprint, followed by construction of a spread foundation system or mat foundation system could be considered. By excavating to remove soil weight from the building footprint, the net stress increase exerted by the footings on the existing soils is decreased. For example, excavation of 10 feet of soil for a basement excavation will result in a decrease in soil pressure on the order of 1,200 psf. If a spread footing system or mat foundation with a bearing pressure of 1,000 psf is then constructed at the site, the net stress increase on the soil should be minimal and the resulting settlement should also be minimal.
- **Stone Columns.** Densification of the soft clay stratum with a ground improvement method such as stone columns or "Geopiers" could be considered. These are typically proprietary systems installed by a specialty foundation contractor. This alternative would involve densification of the stratum in place through the use of ground improvement (e.g., rammed aggregate piers) followed by construction of a shallow foundation system over



the improved stratum. The process of utilizing rammed aggregate piers involves the construction of piers of stone aggregate installed through the unsuitable soils. The installation of the “piers” involves driving a mandrel, which displaces the unsuitable soils into the zone surrounding the pier and filling the void with stone, compacted in a number of lifts during the extraction with a hydraulic ram. The process densifies the area around the piers, and provides “stone columns” at each pier location. The main advantage of this in-situ technique is that following the installation, the soil properties of the site soils in the improved zone can decrease the potential for settlement of foundations constructed over the improved soils.

- **Slab-on-Grade Support.** In selection of a foundation design system, careful consideration must also be given to the interaction between the foundation support system selected and the slab support system, in order to mitigate differential settlement between the slab and the rest of the structure.
- **Sensitive Site Soils.** The shallow site soils are fine-grained and are considered moisture sensitive. Exposure of subgrade soils to precipitation and construction activities will likely weaken the soils and result in yielding subgrade conditions. This condition should be considered in the selection of an approach for foundation and slab construction. Depending upon the foundation alternative selected, it may be necessary to construct a stone mat or mud mat over the subgrade to provide a working surface and to reduce the disturbance to the subgrade from construction activities.

#### F. SITE CONSIDERATIONS

Due to the subsurface conditions at the site, the following items should be considered in regards to the sitework and construction using the on-site soils.

- **Bulk Grading.** Regrading of the site should be reviewed and areas of significant bulk fill should be minimized if possible. The addition of fill to the existing grade will result in consolidation of the underlying site soils, with a greater magnitude of settlement occurring as the thickness of soil fill is increased. Where net fills are required, it is recommended that these be completed as early in the construction sequence as possible so that the majority of the fill-induced settlement can be completed before fine-grading and site finishes (i.e., pavement, sidewalks, stormwater management features) are constructed.
- **Reuse of On-Site Soils.** The shallow site soils typically consist of fine-grained silt and clay soils (Stratum B1) interlayered with silty sands (Stratum B2). These soils, which would comprise a significant portion of the on-site soils likely available for reuse as fill, are generally more difficult to recompact as fill material than predominately granular soils. Laboratory



testing of these soils indicates an in-situ moisture content ranging from 14% to 30%. The moisture density relationship, as determined by a Modified Proctor Test (ASTM D 1557), typically indicates an optimum moisture content in the range of 8% – 14% for this material. It is typically recommended that fill be placed within 2% to 4% of the optimum moisture content, depending on the specific soil type and the required compaction. Therefore, drying of these soils available as fill will likely be required in order to obtain the recommended compaction for structural fill. Because of the fine-grained texture of these soils, drying is usually difficult and impractical to accomplish during the wetter seasons of late fall through early spring. The time, space, and effort required for drying may impact construction scheduling and budgets.

The soft consistency silt/clay soils (Stratum D) were encountered at a very high moisture content (typically over 30%), and it will not be feasible to reuse these materials as structural fill or pavement area fills. Use of these materials in landscaped areas as fill may be feasible, but fine grading with the material will likely be difficult unless it is dried.

Staging of bulk earthwork placement should be carefully considered in construction scheduling and bulk grading design. To be most effective, bulk grading of large areas may be required in order to excavate, place, aerate, and compact site soils in an effective manner. In addition, the construction schedule should be planned so that bulk regrading of the site occurs during the summer and early fall so that the drying of on-site soils is feasible. Should bulk grading extend beyond this period, significant delays will likely result unless imported borrow is utilized.

- **Site Utilities.** Due to the soil conditions on site, underground utilities constructed on site will likely experience some settlement. Particular attention will be required at the interface of the buildings and the utilities that enter the building. The anticipated building settlement (based on the foundation approach selected) should be considered and flexible connections for utilities entering buildings should be provided to accommodate such settlement.

#### G. PAVEMENT AREAS

Based on the information available to date, it is assumed that some minor regrading (i.e., net cuts/fills of generally 3 feet or less) will be required to achieve the finished pavement grades. Based on the test borings performed in the proposed pavement areas, the subsurface conditions generally consisted of a surficial layer of topsoil overlying predominately fine-grained soils (Stratum B1), with some interlayered silty sand (Stratum B2).



The American Association of State Highway and Transportation Officials (AASHTO) has established criteria for defining subgrade conditions. The Stratum B silt and clay soils correspond to AASHTO classifications A-4 or A-6, which are classified as “fair to poor” subgrade soils and, typically, require a deeper paving section to provide drainage and reduce frost susceptibility than predominantly granular subgrade soils.

Placement of a geotextile separator fabric over the subgrade (e.g., woven Geotex 315 or equivalent) is also recommended. The purpose of the geotextile is to both reinforce the pavement subgrade and to provide a “separator” between the fine-grained materials and the pavement base course, thereby, helping to maintain the integrity of the pavement base course aggregate.

Additionally, an underdrain system, located along roadways and in topographic low areas of the proposed parking lots and discharging to the area storm sewer system, is recommended to facilitate drainage of the pavement section. Specific paving section recommendations, as well as a description of a typical underdrain, are provided in the Conclusions and Recommendations section of this report.

## V. CONCLUSIONS AND RECOMMENDATIONS

Based on the data obtained in the field and laboratory testing programs and the subsequent geotechnical analysis, the following conclusions and recommendations are presented.

### A. DESIGN

1. **Additional Analysis of Compressible Soils.** The soils observed throughout most of the proposed campus consist of a relatively thin layer of interlayered silts, clays and sands, overlying a typically 10- to 20-foot-thick layer of soft, compressible, high plasticity silt and clay soils. This soil profile poses a challenge for construction at the site, as the soils are compressible and will exhibit settlement, and possibly significant settlement, under additional loading. As described earlier in this report, the magnitude of settlement is a function of the load applied to the soil by the site regrading and the foundation/slab loading, and the reaction of the compressible soils to this load. The consolidation parameters of the site soils were evaluated through the performance of lab testing on several samples obtained during the test borings at the site. However, due to the importance of these soil parameters in selection of a foundation system, further analysis of these soils is recommended.





Additional laboratory consolidation testing, as well as field monitoring of a “test” surcharge pile placed at the site has been recommended to the project team, to allow further analysis of the in-situ conditions and to assist with determining whether a shallow foundation system will be feasible for the proposed structures.

2. **Foundation System Selection.** Several foundation alternatives are presented herein and have been discussed with the design team. While some further analysis will be required following the completion of the additional field surcharge testing and additional laboratory consolidation testing, some preliminary recommendations regarding the foundation type considered suitable for the various buildings proposed at the site can be provided.
  - **Early Childhood Center.** This single-story building is anticipated to have relatively light column loads. It is anticipated that a spread foundation system with a low bearing pressure, a strap footing/grade beam footing arrangement, or a mat foundation, could be designed for this structure, and result in acceptable foundation settlement. Due to the relatively small footprint of the building, surcharging of the site, or excavation of a basement or crawl space may also be feasible options for this site to allow the use of a spread foundation while reducing the anticipated settlement.
  - **Elementary School.** This building is proposed to have two (2) stories in the classroom area, and a gymnasium and cafeteria area with large column spacing. As a result, higher foundation loads are anticipated for this building relative to the Early Childhood Center. In addition, the footprint of the building is large, and surcharging of the area is likely not practical. Therefore, a deep foundation system is likely the most appropriate foundation system to be considered for this building.
  - **Maintenance Building.** A single-story, approximately 15,000-square-foot maintenance building is proposed to the west of the Elementary School. In this area of the site (test borings TB-12 and TB-13), relatively sandy soils were observed rather than the soft, compressible materials observed throughout the rest of the site. For this building (assuming is it constructed in the location where it was proposed at the time of this evaluation), a conventional spread footing and slab-on-grade are considered suitable. A maximum allowable bearing pressure of 2,500 psf is recommended for design of the spread footings for this structure.
  - **Phase 2 Buildings.** The Middle School and High School buildings are proposed for a future phase of this project. It is anticipated that the buildings in this phase would not be constructed for several years. Since



there is time available, surcharging of the building sites to improve the site soils could be considered. However, the building footprints are quite large and surcharging of entire building area at once would require a large volume of soil. A staged surcharging effort could be considered (i.e., placing a stockpile in one area and then moving it to another area after allowing some time to elapse); however, this could result in differential subgrade conditions at the site.

The results of the additional testing at the site should be considered in further evaluating whether a spread foundation system is feasible for these building. However, with the large anticipated column loads from a multistory building and gymnasium areas, it is unlikely that construction of a spread foundation system with a low bearing capacity will be cost effective.

Up to 6 feet of bulk fill is required to achieve the finished floor elevations of these buildings. Regardless of the foundation system selected, it is recommended that the bulk fills be placed as early as possible to allow the settlement that will result from the bulk fill to be completed prior to the building construction.

3. **Foundation Burial Depth and Size.** If a shallow foundation system is selected, the base of all exterior spread footings in the areas exposed to frost should be placed at least 32 inches below final exterior grade. Interior foundations, which will not be exposed to frost, should be placed at least 18 inches below the proposed finished floor elevation. Building foundations should be proportioned with a minimum dimension of 3 feet for isolated footings and 2 feet for continuous footings, regardless of bearing pressure.
4. **Retaining Wall Design.** Backfill on "unyielding" retaining walls restrained from rotation at the top should be analyzed using the "at rest" earth pressure coefficient,  $K_0$ . The "active" and "passive" earth pressure coefficients,  $K_A$  and  $K_P$ , respectively, should be utilized for the design of "yielding" retaining walls, such as cantilevered walls. All retaining walls (including below-grade portions of the building) should be provided with free-draining, granular backfill materials and a drainage system and/or weep holes to relieve hydrostatic pressures on the walls. The free-draining backfill materials should extend behind the wall to a distance of at least 60% of the wall height. The recommended lateral earth pressure parameters for design are as follows:



	Stratum B1 Silt/Clay Site Soils	Granular Structural Fill (with less than 25% passing a No. 200 sieve)
Moist Unit Weight (pcf)	115	130
Cohesion (psf)	100	0
Angle of Internal Friction	28	34
At Rest Earth Coefficient, $K_0$	0.53	0.44
Active Earth Pressure Coefficient, $K_A$	0.36	0.28
Passive Earth Pressure Coefficient, $K_P$	2.77	3.5
Coefficient of Sliding Friction	0.34	0.42

It should be noted that retaining walls represent a differential loading condition on the underlying soils. Given the compressible nature of the site soils, this differential loading could result in differential settlement issues in the areas adjacent to the retaining wall. This should be considered during selection of retaining wall locations.

5. **Seismic Design Parameters.** Based on subsurface conditions encountered during the field exploration at the site and review of regional geologic maps, a Site Class "E" of the 2006 International Building Code is recommended for the analysis of seismic conditions, as defined by Table 1613.5.2. In the area of the maintenance building where the stratum of compressible soils were not observed, a Site Class "D" could be utilized.
6. **Pavement Design.** Based on an anticipated traffic loading consisting primarily of passenger vehicles (with limited access to trash collection vehicle and other truck traffic) in the parking areas, and passenger vehicles and bus traffic on the roadways and the subgrade conditions encountered, the following pavement sections are recommended.

Parking Area Pavements

1½ inches	Type C, Bituminous Concrete Surface Course
2½ inches	Type B, Bituminous Concrete Base Course
8 inches	Type A Graded Aggregate Base Course
	Geotextile Fabric, Geotex 315 or equivalent
12 inches	Total Depth



Traffic lanes, Dumpster Area and Bus Area Pavements

2 inches	Type C, Bituminous Concrete Surface Course
3 inches	Type B, Bituminous Concrete Base Course
12 inches	Type A Graded Aggregate Base Course
	<u>Geotextile Fabric, Geotex 315 or equivalent</u>
17 inches	Total Depth

All pavement construction and materials should conform to the most recent Delaware Department of Transportation, Standard Specifications for Construction and Materials. Additionally, underdrains are recommended to facilitate drainage within the pavement base course particularly at topographic low areas, such as the base of slopes. A typical underdrain system consists of 4-inch perforated polyethylene pipe (e.g., ADS or equivalent) in AASHTO SP-57 stone bedding. The stone bedding should be at least 12 inches wide and should be wrapped in a geotextile fabric (e.g., Geotex 351 or equivalent).

7. **Site Grading.** Site grading should be designed to provide positive drainage away from the proposed building and pavement areas. Positive site drainage should be maintained throughout the construction activities. In addition, due to the compressible subsurface conditions, bulk fill activities should be completed as early as possible prior to fine grading and the construction of finishes such as sidewalks, pavements, signage, and stormwater management features.
8. **Groundwater.** While perched groundwater conditions were observed at shallow depths in several of the borings, the groundwater table at the site estimated to be on the order of 30 to 40 feet below the ground surface.
9. **Assumptions.** The loading and finished floor elevations assumed in this evaluation should be verified by the project team prior to the completion of their design. If the proposed loading conditions vary from those considered and assumed Duffield Associates should be notified to possibly modify the recommendations provided herein as required.

**B. CONSTRUCTION**

1. **Bulk Grading.** The construction schedule should be arranged such that the majority of the site regrading takes place during the drier periods (May through September), and as far in advance of the final construction as possible in order to allow consolidation settlement of the underlying soils to occur. The performance of site work during warm, dry periods will likely decrease the need for undercutting of soft surficial soils (areas can be aerated and recompacted rather than excavated and replaced with structural fill) and will increase the chances of using on-site soils as structural fill. In addition, large



areas of bulk grading will likely be required to efficiently bulk excavate, place, aerate, and compact site soils. If earthwork is performed during wetter periods, there will likely be a significant increase in earthwork costs due to the need for importing off-site borrow or amending the on-site soils.

2. **Re-use of On-Site Soils as Structural Fill.** On-site soils free of organic material, topsoil, miscellaneous fill, debris and rock fragments in excess of 3 inches in their largest dimension may be suitable as structural fill. A majority of the on-site materials that will be available as fill from the excavations will consist of predominately fine-grained soils. Laboratory testing indicates that these soils are currently present at a moisture content that exceeds the typical range that would allow the recommended compaction to be achieved. As a result, drying of these soils may be required to achieve the recommended compaction. Drying fine-grained soils requires an area in which to spread them out, extended periods of warm, dry weather, and time.

If sufficient quantities of suitable on-site soils are not available for structural fill, imported borrow consisting of predominately granular soils conforming to the requirements of the Delaware Department of Transportation requirements for "Select Borrow" Type G should be utilized. AASHTO SP-57 stone could also be utilized as structural fill at locations as recommended by the project engineer, and should be considered for localized, relatively deep fills such as foundation undercuts and as a base beneath the slab.

3. **Compaction Requirements.** Structural fill utilized within the proposed building areas should be placed in loose lifts with a maximum thickness of 12 inches. Each lift of fill placed within the proposed structure area (defined as the area extending at least 10 feet beyond the building perimeter) should be compacted to at least 95% of the maximum dry density, as determined by the Modified Proctor test (ASTM D 1557). Structural fill for utility trenches, wall backfill and pavement areas, located outside of the proposed building should be compacted to at least 90% of the maximum dry density. The placement and compaction of structural fill should be monitored on a full-time basis by a qualified technician under the supervision of a geotechnical engineer.
4. **Groundwater Control.** Groundwater was generally not encountered during the performance of the test borings. Apparent perched groundwater conditions were observed in several borings at depth of 10 to 18.5 feet below grade. Based on the subsurface conditions observed and available regional data, regional groundwater conditions should be below the depth of typical shallow foundations. However, due to seasonal fluctuations and the presence of localized, perched groundwater, it is considered possible that groundwater may be observed at relatively shallow depths within the footing or utility excavations. If groundwater is encountered, localized sumping may be required. Wherever significant quantities of groundwater are encountered



during foundation and utility trench excavations, it may become necessary for the resulting excavation to be overexcavated by several inches and backfilled with AASHTO SP-57 stone to facilitate sumping and protect the exposed subgrade during construction.

5. **Protection of Subgrade Soils.** Exposure of subgrade soils to precipitation and construction traffic will likely weaken the soils and result in yielding subgrade conditions. Subgrade soils disturbed by precipitation and construction traffic should be either scarified and recompacted or undercut and replaced with structural fill as previously discussed. Subgrade disturbance could be reduced by maintaining positive surface drainage throughout the construction period and limiting construction traffic on the exposed subgrade soils. Where construction traffic is required over the subgrade soils, construction could be staged to allow portions of the existing pavement and unexcavated cut soils to remain in-place during the initial phases of construction. Alternatively, a temporary haul road, consisting of at least 8 to 12 inches of crushed stone over a geotextile fabric (e.g., Geotex 315 or equivalent) should be considered.
6. **Excavation Safety.** All utility and foundation excavation should be performed in accordance with OSHA guidelines. Typically, the medium or stiffer consistency silt soils can be characterized by OSHA CFR Part 1926 Excavation Standards as Type B soils. Soft consistency silt soils and predominately granular soils can be characterized as Type C soils. Should it be required, all temporary sheeting and shoring should be designed by a qualified engineer registered in the State of Delaware.
7. **Subsurface Data.** All contractors interested in bidding on phases of this work which involve subsurface conditions should be given full access to this report so that they can develop their own interpretations of the available data.

These recommendations have been prepared according to generally accepted soil and foundation engineering standards, and are based on the conditions encountered by the sampling performed at the site. Additional recommendations will be provided following the completion of the additional laboratory and field testing at the site. It is noted that, although soil quality has been inferred from the interpolation of the sampling data, subsurface conditions beyond the sampling points are, in fact, unknown. As a result, these preliminary recommendations may require modifications based on the conditions encountered and exposed during construction excavation. Should any conditions encountered during construction differ from those described in this report, this office should be notified immediately in order to review and possibly modify these recommendations. The cost for this construction review is not part of the existing agreement. This report applies solely to the size, type, and location of the structures described herein. In the event that changes are proposed, this report will not be considered valid unless the changes have been reviewed and the recommendations of this report modified and reapproved in writing by Duffield Associates, Inc.



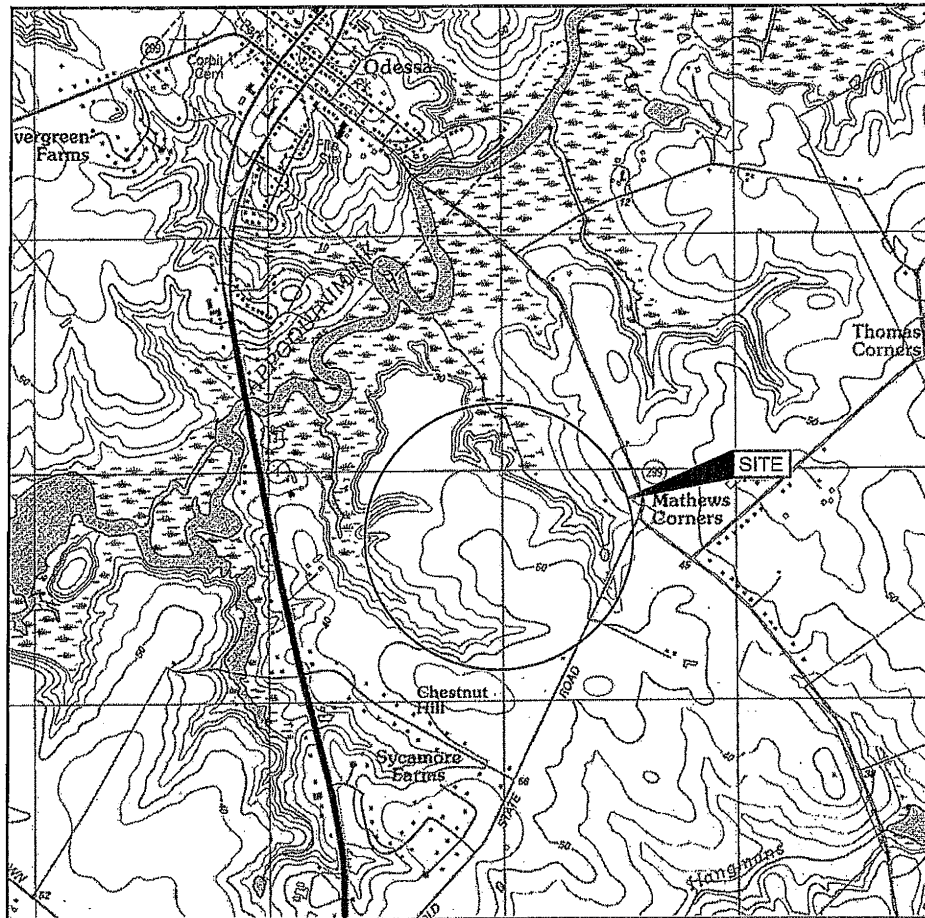
**APPENDIX A**

**SITE LOCATION SKETCH**

**TEST BORING AND INFILTRATION TEST  
LOCATION SKETCH**

*Printed on Recycled Stock* ♻️

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**NOTE:**  
THIS SITE LOCATION SKETCH IS ADAPTED FROM THE U.S.G.S. TOPOGRAPHIC MAP, 7.5  
MINUTE SERIES, FOR MIDDLETOWN AND TAYLORS BRIDGE, DELAWARE-NEW JERSEY 1993.

DATE: 6 JULY 2010	<p align="center"><b>SITE LOCATION SKETCH</b></p> <p align="center"><b>APPOQUINIMINK SCHOOL DISTRICT PROPOSED ODESSA CAMPUS</b></p> <p align="center">ODESSA ~ NEW CASTLE COUNTY ~ DELAWARE</p>	DESIGNED BY: BJD	<p><b>DURFIELD ASSOCIATES</b> Geotechnical Engineering 300 WESTON ROAD MIDDLETOWN, DELAWARE 19709 TEL: 302/639-2222 FAX: 302/639-2245 OFFICES IN PHILADELPHIA, PA GEORGETOWN, DE AND TOWSON, MD</p>
SCALE: 1"=200'		DRAWN BY: MCM	
PROJECT NO. 1975GC		CHECKED BY: <i>SBJ</i>	
SHEET: FIGURE 1		FILE: B-3975GC-01	






## **APPENDIX B**

### **TEST BORING LOGS (42)**

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 <b>DUFFIELD ASSOCIATES</b> <i>Consultants in the Geosciences</i>			<b>TEST BORING TB- 1</b> <div style="text-align: right;">(Page 1 of 1)</div>									
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC			Date Started : June 3, 2010 Date Completed : June 3, 2010 Logged by : JPC Weather : Clear, Hot Driller/Agency : W. Proud/Feldmann Bothers		Drilling Equipment: ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation: 52 feet							
Depth in feet	Surf. Elev. 52 ft	GRAPHIC	USCS	Sample Condition	Water Levels	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL
				<input checked="" type="checkbox"/> Remolded	<input checked="" type="checkbox"/> During Drilling							
DESCRIPTION												
0												
50			ML			<input checked="" type="checkbox"/>	S-1	3-3-4	0.1			
			MH			<input type="checkbox"/>	S-2A	6-10-18	1.5	18.4	84.7	
5			MH			<input type="checkbox"/>	S-2B					
45						<input checked="" type="checkbox"/>	S-3	3-4-4	1.5			
			MH			<input checked="" type="checkbox"/>	S-4	2-3-4	1.5			
10						<input type="checkbox"/>	S-5A	2-1-2	1.5	63.3	97.5	
40						<input type="checkbox"/>	S-5B					
15			CH			<input checked="" type="checkbox"/>	S-6	2-3-3	1.5			
35			CH									
20												
30												
25												
25												
30												
20												
35												
15												
40												

**NOTES:**

- Test boring terminated at ± 20 feet b.e.g.s. (below existing ground surface)
- Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".
- Wet on spoon conditions observed at 13 feet b.e.g.s. with augers at 13.5 feet

b.e.g.s., water level at 13.5 feet b.e.g.s.


- Boring caved and dry at 7.3 feet b.e.g.s. upon completion.
- Test boring backfilled with auger cuttings upon completion.

 <b>DUFFIELD ASSOCIATES</b> <i>Consultants in the Geosciences</i>				TEST BORING TB- 2								
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC				Date Started : May 28, 2010 Date Completed : May 28, 2010 Logged by : TRA Weather : Partly Cloudy, 70's Driller/Agency : W. Proud/Feldmann Bothers		Drilling Equipment : ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation : 52 feet						
Depth in feet	Surf. Elev. 52 ft	GRAPHIC	USCS	Sample Condition	Water Levels	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL
				<input checked="" type="checkbox"/> Remolded								
DESCRIPTION												
0				Topsoil (5.5 inches)								
50			SM	Brown, orange-brown fine to medium SAND, some to and gravel, little clayey silt, trace coarse sand (moist, slightly sticky)		<input checked="" type="checkbox"/>	S-1	2-5-10	1.0			
5				Brown, gray-brown, light gray fine to medium SAND, little to some gravel, little silt, trace sand (moist)		<input checked="" type="checkbox"/>	S-2	21-14-12	1.0			
45			MH	Light gray, orange-brown, gray-brown mottled SILT, trace fine sand (moist, blocky structure)		<input checked="" type="checkbox"/>	S-3	3-4-6	1.3			
10				Light gray, orange-brown, gray-brown SILT, trace fine sand (moist) (Liquid Limit=75, Plasticity Index=40)		<input checked="" type="checkbox"/>	S-4	2-4-5	1.5	49.1	97.7	
40			CH	Dark gray, black CLAY, trace silt, trace fine sand (moist, slight sulfur/organic like odor)		<input checked="" type="checkbox"/>	S-5	3-5-7	1.5			
15				Dark gray, black CLAY, trace silt, trace fine sand (moist, slight sulfur/organic like odor)		<input checked="" type="checkbox"/>	S-6	3-7-7	1.5			
35												
20												
30												
25												
25												
30												
20												
35												
15												
40												

**NOTES:**

1. Test boring terminated at ± 20 feet b.e.g.s. (below existing ground surface)
2. Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".
3. Boring caved and dry at 2.6 feet b.e.g.s. upon completion.


4. Test boring backfilled with auger cuttings upon completion.

 <b>DUFFIELD ASSOCIATES</b> <i>Consultants in the Geosciences</i>				TEST BORING TB- 3								
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC				Date Started : May 28, 2010 Date Completed : May 28, 2010 Logged by : TRA Weather : Partly Cloudy, 70's Driller/Agency : W. Proud/Feldmann Bothers		Drilling Equipment : ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation : 53 feet						
Depth in feet	Surf. Elev. 53 ft	GRAPHIC	USCS	Sample Condition	Water Levels	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL
				<input checked="" type="checkbox"/> Remolded								
DESCRIPTION												
0				Topsoil (6 inches)								
50			SM	Light brown, dark brown fine to medium SAND, little silt (moist, slightly sticky)		<input checked="" type="checkbox"/>	S-1	2-3-4	0.9			
5			SM	Light gray-brown, yellow-brown fine to medium SAND, trace to little silt (moist)		<input checked="" type="checkbox"/>	S-2	3-4-3	1.1			
45				Orange-brown, light brown fine SAND, trace to little silt, trace coarse to medium sand and gravel (wet)		<input checked="" type="checkbox"/>	S-3	3-4-14	1.2	19.5	20.6	
10			MH	Dark red-brown, orange-brown, black, highly oxidized fine to coarse SAND, some gravel, trace to little silt (wet, driving gravel)		<input checked="" type="checkbox"/>	S-4A S-4B	14-5-5	0.8			
40				Light gray, orange-brown, mottled SILT (moist)								
15			CL	Greenish-gray CLAY (moist, platy)		<input checked="" type="checkbox"/>	S-5	3-3-6	1.5			
35				Dark gray, black CLAY, trace silt and fine sand, trace glistening/shiny specks (moist, platy, slight sulfur/organic like odor)		<input checked="" type="checkbox"/>	S-6	4-4-5	1.5	52.6	99.9	
20												
30												
25												
25												
30												
20												
35												
15												
40												

**NOTES:**


1. Test boring terminated at ± 20 feet b.e.g.s. (below existing ground surface)
2. Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".
3. Boring caved and dry at 12.9 feet b.e.g.s. upon completion.

4. Test boring backfilled with auger cuttings upon completion.

 <b>DUFFIELD ASSOCIATES</b> <i>Consultants in the Geosciences</i>				<b>TEST BORING TB- 4</b> (Page 1 of 1)								
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC				Date Started : June 3, 2010 Date Completed : June 4, 2010 Logged by : JPC Weather : Clear, Hot Driller/Agency : W. Proud/Feldmann Bothers		Drilling Equipment : ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation : 52 feet						
Depth in feet	Surf. Elev. 52 ft	GRAPHIC	USCS	Sample Condition	Water Levels	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL
				<input checked="" type="checkbox"/> Remolded <input type="checkbox"/> Undisturbed	<input checked="" type="checkbox"/> During Drilling <input type="checkbox"/> At completion							
0												
50			SM			<input checked="" type="checkbox"/>	S-1A S-1B	1-3-5	1.2	14.2	40.1	
5						<input checked="" type="checkbox"/>	S-2	4-4-6	1.0			
45						<input checked="" type="checkbox"/>	S-3	3-5-5	1.5			
10			MH			<input checked="" type="checkbox"/>	S-4	2-4-4	1.5			
40						<input checked="" type="checkbox"/>	ST-1	P-U-S-H	1.1			
15						<input checked="" type="checkbox"/>	S-5	WH/1.0-3	1.3	63.8	96.2	
35						<input checked="" type="checkbox"/>	S-6	1-2-5	1.5			
20						<input checked="" type="checkbox"/>	S-7	4-5-9	1.5			
30			CH			<input checked="" type="checkbox"/>	S-8	4-5-8	1.5			
25						<input checked="" type="checkbox"/>	S-9	4-6-9	1.5			
30						<input checked="" type="checkbox"/>	S-10A S-10B	5-13-21	1.5			
20			SM									
35			SM									
15												
40												

NOTES:  
 1. Test boring terminated at ± 35 feet b.e.g.s. (below existing ground surface)  
 2. Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".  
 3. Wet on rods conditions observed at 10 feet b.e.g.s. with augers at 12 feet b.e.g.s.,  
 4. water level at 10 feet b.e.g.s.  
 5. "WH" indicates weight of hammer.  
 6. Upon completion boring caved at 29.6 feet b.e.g.s. with water level at 11.2 feet b.e.g.s.  
 7. Test boring backfilled with auger cuttings upon completion.

003132-33

 <b>DUFFIELD ASSOCIATES</b> <i>Consultants in the Geosciences</i>				<b>TEST BORING TB- 6</b> (Page 1 of 1)								
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC				Date Started : May 28, 2010 Date Completed : May 28, 2010 Logged by : TRA Weather : Partly Sunny, 70's Driller/Agency : W. Proud/Feldmann Bothers		Drilling Equipment : ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation: 43 feet						
Depth in feet	Surf. Elev. 43 ft	GRAPHIC	USCS	Sample Condition	Water Levels	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL
				<input checked="" type="checkbox"/> Remolded								
0												
40			SC			<input checked="" type="checkbox"/>	S-1	2-3-4	1.1			
						<input checked="" type="checkbox"/>	S-2	4-6-8	1.3	20.3	53.4	
5						<input checked="" type="checkbox"/>	S-3	3-3-3	1.5			
						<input checked="" type="checkbox"/>	S-4	2-2-3	1.5			
35						<input checked="" type="checkbox"/>	S-5	1-2-3	1.5			
						<input checked="" type="checkbox"/>	S-6	4-8-11	1.5	59.2	99.7	
10						<input checked="" type="checkbox"/>	S-7	8-12-14	1.5			
30												
15												
5												
40												

**NOTES:**

1. Test boring terminated at ± 25 feet b.e.g.s. (below existing ground surface)
2. Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".
3. Boring caved and dry at 14.1 feet b.e.g.s. upon completion.

4. Test boring backfilled with auger cuttings upon completion.

TBLOGPASSM% 3975.GC.GPJ DUFFIELD.GDT 7/7/10

<b>DUFFIELD ASSOCIATES</b> <small>Consultants in the Geosciences</small>				<b>TEST BORING TB- 7</b> <small>(Page 1 of 1)</small>								
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC				Date Started : June 1, 2010 Date Completed : June 1, 2010 Logged by : TRA Weather : Sunny, windy, 80's Driller/Agency : W. Proud/Feldmann Bothers		Drilling Equipment : ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation : 45 feet						
Depth in feet	Surf. Elev. 45 ft	GRAPHIC	USCS	Sample Condition	Water Levels	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL
				<input checked="" type="checkbox"/> Remolded								
DESCRIPTION												
0	45			Topsoil (7 inches)								
			CL	Brown, dark brown silty CLAY, some to little fine to medium sand, trace gravel, trace coarse sand (moist)		<input checked="" type="checkbox"/>	S-1	2-3-4	1.0			
5	40		MH	Light brown-gray, yellow-brown, mottled SILT, trace fine sand (moist)		<input checked="" type="checkbox"/>	S-2	2-4-7	1.4			
				Light gray, light brown, orange-brown, mottled SILT, trace fine sand (moist to wet)		<input checked="" type="checkbox"/>	S-3	2-1-3	1.5	63.3	97.7	
10	35			Light gray, light brown, orange-brown, mottled SILT, trace fine sand (moist to wet)		<input checked="" type="checkbox"/>	S-4	1-2-3	1.5			
15	30			Purplish-light gray, orange-brown, mottled CLAYEY SILT, trace fine sand (moist to wet)		<input checked="" type="checkbox"/>	S-5	2-2-3	1.5			
20	25											
25	20											
30	15											
35	10											
40	5											

**NOTES:**

1. Test boring terminated at ± 15 feet b.e.g.s. (below existing ground surface)















2. Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".

3. Boring caved and dry at 3.2 feet b.e.g.s. upon completion.

4. Test boring backfilled with auger cuttings upon completion.

TELOP0355M% 3975.GC.GPJ DUFFIELD.GDT 7/7/10



 <b>DUFFIELD ASSOCIATES</b> <i>Consultants In the Geosciences</i>				<b>TEST BORING TB- 8</b>  (Page 1 of 1)										
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC				Date Started : June 2, 2010 Date Completed : June 2, 2010 Logged by : TRA Weather : Clear, 90's Driller/Agency : W. Proud/Feldmann Bothers				Drilling Equipment : ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation : 48 feet Northing : 0 Easting : 300						
Depth in feet	Surf. Elev. 48 ft	GRAPHIC	USCS	Sample Condition  Remolded  Undisturbed		Water Levels		SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL
				DESCRIPTION										
0				Topsoil (6 inches)			S-1	2-3-5	1.3					
45			Light blue-gray, gray-brown, light brown, slightly mottled SILT, some fine to medium sand (moist)			S-2	6-23-19	0.7	19.7	72.8				
5			Light blue-gray, gray-brown, light brown, slightly mottled SILT, some fine to medium sand (moist, driving gravel)			S-3	3-5-5	1.5						
40			Light blue-gray, yellow-brown, slightly mottled SILT, trace fine to medium sand (moist)			S-4	2-3-4	1.5						
10			MH	Light gray, yellow brown, slightly mottled SILT, trace fine sand (moist)			ST-1	PUSH	2.2					
35			SHELBY TUBE ST-1: 10.0' - 12.0'			S-5	1-2-2	1.5						
15			Light purplish-gray, yellow brown, light blue-gray, slightly mottled SILT, trace fine to medium sand (moist to wet)			S-6	2-2-2	1.5						
30				Black silty CLAY, trace fine sand (moist, slight organic/sulfur-like odor)			S-7	4-8-10	1.5					
20			CH											
25				Green-black fine SAND and silty clay, trace medium sand (moist, slight organic/sulfur-like odor)			S-8	5-8-10	1.5	41.8	37.5			
25		SC												
20			Orange-brown, green-gray, yellow-green fine to medium SAND, little silt, trace coarse sand (moist, Apparent Vincentown Fm)			S-9	12-9-12	1.5						
30		SM												
15														
35														
10														
40														

NOTES:

1. Test boring terminated at ± 30 feet b.e.g.s. (below existing ground surface)





2. Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".

3. Boring caved and dry at 20.3 feet b.e.g.s. upon completion.

4. Driller reports gravel at 5 feet b.e.g.s. to 5.5 feet b.e.g.s.

5. Test boring backfilled with auger cuttings upon completion.

BL06P ASS MW% 3975.GC.GPJ DUFFIELD.GDT 7/18/10

 <b>DUFFIELD ASSOCIATES</b> <i>Consultants in the Geosciences</i>				<b>TEST BORING TB- 9</b> (Page 1 of 1)								
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC				Date Started : June 1, 2010 Date Completed : June 1, 2010 Logged by : TRA Weather : Sunny, windy, 80's Driller/Agency : W. Proud/Feldmann Bothers		Drilling Equipment: ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation: 44 feet						
Depth in feet	Surf. Elev. 44 ft	GRAPHIC	USCS	Sample Condition <input checked="" type="checkbox"/> Remolded	Water Levels	SAMPLES	Sample Number	Blows per 6 Inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL
				DESCRIPTION								
0				Topsoil (7 inches)		<input checked="" type="checkbox"/>	S-1	2-2-4	1.2			
40			CL	Brown, orange-brown, gray-brown, slightly mottled CLAY, trace fine sand, trace roots (moist)		<input checked="" type="checkbox"/>	S-2	2-2-4	1.5			
5			MH	Yellow-brown, light gray, orange-brown clayey SILT, trace fine sand (moist to wet)		<input checked="" type="checkbox"/>	S-3	1-2-4	1.5	67.6	99.1	
35				Light gray, light brown, mottled clayey SILT, trace fine sand (moist)		<input checked="" type="checkbox"/>	S-4	2-2-3	1.5			
10				Light gray, light brown, mottled clayey SILT, trace fine sand (moist)		<input checked="" type="checkbox"/>	S-5	1-2-3	1.5			
30				Light gray, yellow-brown, orange-brown, dark brown, slightly mottled clayey SILT, trace fine to medium sand (moist)		<input checked="" type="checkbox"/>						
15												
25												
20												
25												
20												
25												
15												
30												
10												
35												
5												
40												

**NOTES:**

- Test boring terminated at ± 15 feet b.e.g.s. (below existing ground surface)
- Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".
- Boring caved and dry at 9.7 feet b.e.g.s. upon completion.
- Test boring backfilled with auger cuttings upon completion.




<b>DUFFIELD ASSOCIATES</b> <small>Consultants in the Geosciences</small>				<b>TEST BORING TB-10</b> (Page 1 of 1)								
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC				Date Started : June 1, 2010 Date Completed : June 1, 2010 Logged by : TRA Weather : Sunny, windy, 80's Driller/Agency : W. Proud/Feldmann Bothers		Drilling Equipment : ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation : 46 feet						
Depth in feet	Surf. Elev. 46 ft	GRAPHIC	USCS	Sample Condition <input checked="" type="checkbox"/> Remolded	Water Levels <input checked="" type="checkbox"/> During Drilling	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL
DESCRIPTION												
0				Topsoil (8 inches)		<input checked="" type="checkbox"/>						
45			CL	Brown clayey CLAY, some fine to medium sand, trace coarse sand, trace gravel (Liquid Limit=32, Plasticity Index=13)		<input checked="" type="checkbox"/>	S-1	2-3-4	1.1	14.9	58.2	
5				Orange-brown, light blue-gray, mottled clayey SILT, trace fine to medium sand (moist)		<input checked="" type="checkbox"/>	S-2	2-5-8	1.5			
40				Light gray, yellow-brown, slightly mottled clayey SILT, trace fine sand (moist, blocky structure)		<input checked="" type="checkbox"/>	S-3	2-4-4	1.5			
10				Light purplish gray, yellow-brown clayey SILT, trace fine sand (moist to wet)		<input checked="" type="checkbox"/>	S-4	1-2-2	1.5			
35			MH	Light purplish-gray, yellow-brown, dark red-brown clayey SILT, trace fine sand, trace iron oxide (medium sand sized), (moist to wet)		<input checked="" type="checkbox"/>	S-5	1-2-2	1.5			
15				Purple, brown, light purplish gray, very dark red-brown clayey SILT, trace fine sand, trace iron oxide (medium sand sized), (moist to wet)		<input checked="" type="checkbox"/>	S-6	1-1-1	1.5	71.6	92.5	
20				Purplish light gray, orange-brown silty clayey SILT, and fine sand (moist to wet)		<input checked="" type="checkbox"/>	S-7A S-7B S-7C	2-2-4	1.5			
25			SM	Black, light brown fine SAND and SILT (moist to wet, slight organic/sulfur-like odor) Gray, purplish gray fine to coarse SAND, some to and clayey silt (moist)		<input checked="" type="checkbox"/>						
30												
35												
40												

**NOTES:**










- Test boring terminated at ± 25 feet b.e.g.s. (below existing ground surface)
- Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".
- Wet on spoon conditions observed at 18.2 feet b.e.g.s. with augers at 18.5 feet

b.e.g.s., water level at 16.8 feet b.e.g.s.

- Boring caved and dry at 4.8 feet b.e.g.s. upon completion.
- Test boring backfilled with auger cuttings upon completion.










 <b>DUFFIELD ASSOCIATES</b> <i>Consultants in the Geosciences</i>			<b>TEST BORING TB-11</b> (Page 1 of 1)									
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC			Date Started : June 2, 2010 Date Completed : June 2, 2010 Logged by : TRA Weather : P. Cloudy, 90's Driller/Agency : W. Proud/Feldmann Bothers		Drilling Equipment: ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation: 42 feet							
Depth in feet	Surf. Elev. 42 ft	GRAPHIC	USCS	Sample Condition  Remolded  Undisturbed	Water Levels	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL
DESCRIPTION												
0												
40												
5			CL				S-1	3-3-4	1.1			
35							S-2	3-3-6	1.5			
10							S-3	1-2-2	1.5			
30			MH				S-4	2-2-3	1.5			
15							ST-1	P-U-S-H	2.1	76.1	97.7	
25							S-5	1-2-2	1.5			
20							S-6	2-2-2	1.5			
20			SM				S-7	3-4-5	1.5	36.8	26.7	
25			SM				S-8	8-11-13	1.3			
15												
30												
10												
35												
5												
40												


NOTES:  
 1. Test boring terminated at ± 25 feet b.e.g.s. (below existing ground surface)  
 2. Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".  
 3. Boring caved and dry at 16.4 feet b.e.g.s. upon completion.  
 4. Test boring backfilled with auger cuttings upon completion.

 <b>DUFFIELD ASSOCIATES</b> <i>Consultants in the Geosciences</i>				<b>TEST BORING TB-12</b> (Page 1 of 1)								
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC				Date Started : June 1, 2010 Date Completed : June 1, 2010 Logged by : EBS Weather : Clear, 80's Driller/Agency : W. Proud/Feldmann Bothers		Drilling Equipment : ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation : 28 feet						
Depth in feet	Surf. Elev. 28 ft	GRAPHIC	USCS	Sample Condition <input checked="" type="checkbox"/> Remolded	Water Levels <input checked="" type="checkbox"/> During Drilling	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL
DESCRIPTION												
0				Topsoil (8 inches)								
			ML	Brown SILT, some fine to coarse sand, little clay, trace gravel		<input checked="" type="checkbox"/>	S-1	1-2-14	0.9			
25			CL	Brown silty CLAY, some fine to coarse sand		<input checked="" type="checkbox"/>	S-2	5-4-6	1.3			
5			SM	Brown fine to coarse SAND, little silt		<input checked="" type="checkbox"/>	S-3	5-13-9	1.2			
20			SM	Brown, red-brown, green-brown fine to medium SAND, little to trace silt, trace coarse sand		<input checked="" type="checkbox"/>	S-4	7-10-12	1.1			
10			SM	Brown, red-brown, green-brown, gray-brown fine SAND, little to trace silt, trace medium to coarse sand		<input checked="" type="checkbox"/>	S-5	10-17-18	1.4			
15			SM	Brown, red-brown, green-brown, gray-brown fine SAND, little to trace silt, trace medium to coarse sand		<input checked="" type="checkbox"/>	S-6	5-7-7	1.2	21.6	11.4	
20			SM	Deep yellow-brown, green-brown fine SAND, little silt (damp)		<input checked="" type="checkbox"/>						
5												
25												
0												
30												
-5												
35												
-10												
40												

NOTES:  
 1. Test boring terminated at ± 20 feet b.e.g.s. (below existing ground surface)  
 2. Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".  
 3. Wet on spoon conditions observed at 18.5 feet b.e.g.s. with augers at 18.5 feet  
 4. Boring caved and dry at 12.2 feet b.e.g.s. upon completion.  
 5. Test boring backfilled with auger cuttings upon completion.

b.e.g.s., dry through augers.


 <b>DUFFIELD ASSOCIATES</b> <i>Consultants in the Geosciences</i>				<b>TEST BORING TB-13</b> (Page 1 of 1)									
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC				Date Started : June 1, 2010 Date Completed : June 1, 2010 Logged by : EBS Weather : Clear, 80's Driller/Agency : W. Proud/Feldmann Bothers				Drilling Equipment: ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation: 30 feet					
Depth in feet	Surf. Elev. 30 ft	GRAPHIC	USCS	Sample Condition	Water Levels		SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL
				<input checked="" type="checkbox"/> Remolded									
DESCRIPTION													
0	30			Topsoil (6 inches)									
			SM	Brown fine SAND, some to and silt, little medium to coarse sand, trace gravel		<input checked="" type="checkbox"/>	S-1	2-3-7	0.9				
			CH	Brown fine SAND, some to and silt, trace medium to coarse sand, trace gravel		<input checked="" type="checkbox"/>	S-2A S-2B	4-4-5	1.4		37.8	97.3	
5	25		SC	Gray, orange-brown silty CLAY, little fine to medium sand		<input checked="" type="checkbox"/>	S-3	2-4-8	1.1				
			SM	Brown, gray fine SAND, and silty clay, trace medium to coarse sand		<input checked="" type="checkbox"/>	S-4	5-5-7	0.8		10.5	12.3	
10	20		SM	Brown fine SAND, little silt, little to trace medium to coarse sand		<input checked="" type="checkbox"/>	S-5	12-18-22	1.5				
15	15		SM	Green-gray, brown fine SAND, trace to little silt, trace medium to coarse sand		<input checked="" type="checkbox"/>	S-6	12-14-15	1.4				
20	10		SM	Brown-gray, brown fine SAND, little-trace silt, trace medium to coarse sand		<input checked="" type="checkbox"/>							
25	5												
30	0												
35	-5												
40	-10												
NOTES: 1. Test boring terminated at ± 20 feet b.e.g.s. (below existing ground surface) 2. Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg". 3. Boring caved and dry at 10.2 feet b.e.g.s. upon completion. 4. Test boring backfilled with auger cuttings upon completion.													

 <b>DUFFIELD ASSOCIATES</b> <i>Consultants in the Geosciences</i>				<b>TEST BORING TB-14</b> (Page 1 of 1)									
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC				Date Started : June 1, 2010 Date Completed : June 1, 2010 Logged by : TRA Weather : P. cloudy, windy, 80's Driller/Agency : W. Proud/Feldmann Bothers		Drilling Equipment : ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation : 41 feet							
Depth in feet	Surf. Elev. 41 ft	GRAPHIC	USCS	Sample Condition	Water Levels	SAMPLES	Sample Number	Blows per 6 Inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL	
				<input checked="" type="checkbox"/> Remolded									DESCRIPTION
0													
40													
			CL			<input checked="" type="checkbox"/>	S-1	3-3-4	0.9				
						<input checked="" type="checkbox"/>	S-2	3-4-6	1.3	33.1	97.5		
5						<input checked="" type="checkbox"/>	S-3	2-3-4	1.5				
35						<input checked="" type="checkbox"/>	S-4	2-3-3	1.5				
30			CH			<input checked="" type="checkbox"/>	S-5	2-2-2	1.5				
25						<input checked="" type="checkbox"/>	S-6	16-10-9	1.3				
20			SM			<input checked="" type="checkbox"/>							
20													
25													
15													
30													
10													
35													
5													
40													

**NOTES:**

1. Test boring terminated at ± 20 feet b.e.g.s. (below existing ground surface)
2. Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".
3. Boring caved and dry at 6.2 feet b.e.g.s. upon completion.


4. Test boring backfilled with auger cuttings upon completion.

 <b>DUFFIELD ASSOCIATES</b> <i>Consultants in the Geosciences</i>				<b>TEST BORING TB-15</b> (Page 1 of 1)								
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC				Date Started : June 1, 2010 Date Completed : June 1, 2010 Logged by : TRA Weather : P. cloudy, windy, 80's Driller/Agency : W. Proud/Feldmann Bothers		Drilling Equipment : ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation : 48 feet						
Depth in feet	Surf. Elev. 48 ft	GRAPHIC	USCS	Sample Condition <input checked="" type="checkbox"/> Remolded	Water Levels	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL
DESCRIPTION												
0				Topsoil (5 inches)								
45				Dark brown, orange-brown, red-brown fine to medium SAND and clayey SILT, trace coarse sand, trace gravel (moist)			<input checked="" type="checkbox"/>	S-1	1-3-6	1.2		
5			SM	Brown, orange-brown, yellow-brown fine to medium SAND, some silt, trace coarse sand (moist)			<input checked="" type="checkbox"/>	S-2	4-6-8	1.3		
40				Orange-brown, yellow-brown fine to medium SAND, some to and silt, trace coarse sand (moist)			<input checked="" type="checkbox"/>	S-3	6-8-7	1.3		
10				Orange-brown, light brown, gray fine to coarse SAND, and gravel, little silt (moist)			<input checked="" type="checkbox"/>	S-4	40-18-10	1.2	11.4	21.9
35				Purplish light gray, yellow-brown, slightly mottled silty CLAY, trace fine sand (moist)			<input checked="" type="checkbox"/>	S-5	2-2-2	1.5		
15			CH	Purple, purplish-gray, orange-brown, very dark red-brown, mottled CLAY, trace fine sand, trace iron oxide (medium sand sized), (moist)			<input checked="" type="checkbox"/>	S-6	2-2-3	1.5		
30												
20												
25												
25												
20												
30												
15												
35												
10												
40												



NOTES:  
 1. Test boring terminated at ± 20 feet b.e.g.s. (below existing ground surface)  
 2. Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".  
 3. Boring caved and dry at 13.4 feet b.e.g.s. upon completion.  
 4. Test boring backfilled with auger cuttings upon completion.

TBLOGPASSM% 3975.GC.GPJ DUFFIELD.GDT 7/7/10



 <b>DUFFIELD ASSOCIATES</b> <i>Consultants in the Geosciences</i>				<b>TEST BORING TB-16</b> (Page 1 of 1)								
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC				Date Started : May 28, 2010 Date Completed : May 28, 2010 Logged by : TRA Weather : P. cloudy, windy, 70's Driller/Agency : W. Proud/Feldmann Bothers		Drilling Equipment : ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation : 42 feet						
Depth in feet	Surf. Elev. 42 ft	GRAPHIC	USCS	Sample Condition <input checked="" type="checkbox"/> Remolded	Water Levels	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL
				DESCRIPTION								
0												
40			CL			<input checked="" type="checkbox"/>	S-1	1-1-4	0.7			
5						<input checked="" type="checkbox"/>	S-2	3-4-5	1.2			
35			CH			<input checked="" type="checkbox"/>	S-3	2-2-2	1.5	48.8	95.9	
10						<input checked="" type="checkbox"/>	S-4	2-2-3	1.5			
30						<input checked="" type="checkbox"/>	S-5	2-2-2	1.5			
15						<input checked="" type="checkbox"/>	S-6	2-2-2	1.5			
25												
20												
20												
25												
15												
30												
10												
35												
5												
40												


NOTES:  
 1. Test boring terminated at ± 20 feet b.e.g.s. (below existing ground surface)  
 2. Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".  
 3. Boring caved and dry at 3.8 feet b.e.g.s. upon completion.  
 4. Test boring backfilled with auger cuttings upon completion.

 <b>DUFFIELD ASSOCIATES</b> <small>Consultants in the Geosciences</small>			<b>TEST BORING TB-17</b> <small>(Page 1 of 1)</small>									
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC			Date Started : May 28, 2010 Date Completed : May 28, 2010 Logged by : TRA Weather : P. cloudy, windy, 70's Driller/Agency : W. Proud/Feldmann Bothers		Drilling Equipment : ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation : 45 feet							
Depth in feet	Surf. Elev. 45 ft	GRAPHIC	USCS	Sample Condition	Water Levels	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL
				<input checked="" type="checkbox"/> Remolded								
DESCRIPTION												
0	45		CL	Topsoil (6 inches) Brown silty CLAY, little gravel, trace to little medium to coarse sand (moist)								
5	40			Purplish light gray, orange-brown, mottled CLAY (moist)								
			Purplish light gray, orange-brown, mottled CLAY (moist to wet)									
10	35		CH	Purplish light gray, yellow-brown, orange-brown, slightly mottled CLAY (moist to wet)								
15	30			Purple, yellow-brown, purplish, light gray, slightly mottled CLAY, trace coarse sand, trace fine sand (moist to wet)								
20	25			Purple, red-brown CLAY, trace fine-medium sand, trace iron oxide along fissures (moist)								
		CH	Purple, light gray, orange-brown silty CLAY, some fine to medium sand, trace coarse sand									
25	20											
30	15											
35	10											
40	5											



**NOTES:**

- Test boring terminated at ± 20 feet b.e.g.s. (below existing ground surface)
- Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".
- Boring caved and dry at 3.8 feet b.e.g.s. upon completion.

- Test boring backfilled with auger cuttings upon completion.


 <b>DUFFIELD ASSOCIATES</b> <i>Consultants in the Geosciences</i>				<b>TEST BORING TB-18</b> (Page 1 of 1)								
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC				Date Started : June 1, 2010 Date Completed : June 1, 2010 Logged by : TRA Weather : P. cloudy, windy, 70's Driller/Agency : W. Proud/Feldmann Bothers		Drilling Equipment : ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation : 42 feet						
Depth in feet	Surf. Elev. 42 ft	GRAPHIC	USCS	Sample Condition	Water Levels	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL
				<input checked="" type="checkbox"/> Remolded								
DESCRIPTION												
0												
40			ML			<input checked="" type="checkbox"/>	S-1	3-3-6	1.0	16.8	54.4	
			CL			<input checked="" type="checkbox"/>	S-2	3-12-18	1.1			
5			SM			<input checked="" type="checkbox"/>	S-3A S-3B	6-4-4	1.4			
35						<input checked="" type="checkbox"/>	S-4	1-2-3	1.5			
10			CH			<input checked="" type="checkbox"/>	S-5	1-2-3	1.5			
30						<input checked="" type="checkbox"/>	S-6	2-3-5	1.5			
15												
25												
20												
20												
25												
15												
30												
10												
35												
5												
40												

NOTES:  
 1. Test boring terminated at ± 20 feet b.e.g.s. (below existing ground surface)  
 2. Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".  
 3. Boring caved and dry at 4.5 feet b.e.g.s. upon completion.  
 4. Test boring backfilled with auger cuttings upon completion.

 <b>DUFFIELD ASSOCIATES</b> <i>Consultants in the Geosciences</i>				<b>TEST BORING TB-19</b> (Page 1 of 1)								
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC				Date Started : May 28, 2010 Date Completed : May 28, 2010 Logged by : TRA Weather : Cloudy, 70's Driller/Agency : W. Proud/Feldmann Bothers		Drilling Equipment: ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation: 45 feet						
Depth in feet	Surf. Elev. 45 ft	GRAPHIC	USCS	Sample Condition <input checked="" type="checkbox"/> Remolded	Water Levels	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL
				DESCRIPTION								
0	45											
			CL	Topsoil (11 inches)	<input checked="" type="checkbox"/>	S-1	1-3-4	1.1				
				Brown, yellow-brown, dark brown silty CLAY, little fine to medium sand, trace coarse sand and gravel (moist)	<input checked="" type="checkbox"/>	S-2	3-3-5	1.3				
5	40			Light gray, orange-brown slightly mottled CLAY, trace fine sand (moist, blocky structure)	<input checked="" type="checkbox"/>	S-3	1-2-3	1.5				
			CH	Light pinkish gray, orange-brown, slightly mottled CLAY (moist to wet)	<input checked="" type="checkbox"/>	S-4	2-3-3	1.5				
10	35			Light pinkish gray, orange-brown, slightly mottled CLAY (moist to wet)	<input checked="" type="checkbox"/>	S-5	2-2-2	1.5				
15	30			Light gray, orange-brown, light pinkish-gray mottled CLAY (moist)	<input checked="" type="checkbox"/>							
20	25											
25	20											
30	15											
35	10											
40	5											


**NOTES:**

1. Test boring terminated at ± 15 feet b.e.s. (below existing ground surface)
2. Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".
3. Boring caved and dry at 3.2 feet b.e.s. upon completion.
4. Test boring backfilled with auger cuttings upon completion.

 <b>DUFFIELD ASSOCIATES</b> <small>Consultants in the Geosciences</small>				<b>TEST BORING TB-20</b> (Page 1 of 1)								
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC				Date Started : May 28, 2010 Date Completed : May 28, 2010 Logged by : TRA Weather : Cloudy, windy, 70's Driller/Agency : W. Proud/Feldmann Bothers		Drilling Equipment: ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation: 48 feet						
Depth in feet	Surf. Elev. 48 ft	GRAPHIC	USCS	Sample Condition <input checked="" type="checkbox"/> Remolded	Water Levels	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL
				DESCRIPTION								
0												
			CL			<input checked="" type="checkbox"/>	S-1	2-2-2	0.8			
45			SC			<input checked="" type="checkbox"/>	S-2	4-7-12	1.5			
5						<input checked="" type="checkbox"/>	S-3	2-4-7	1.5			
40			CH			<input checked="" type="checkbox"/>	S-4	2-4-5	1.5			
10						<input checked="" type="checkbox"/>	S-5	2-2-3	1.5			
35												
15												
30												
20												
25												
25												
20												
30												
15												
35												
10												
40												

**NOTES:**


- Test boring terminated at ± 15 feet b.e.g.s. (below existing ground surface)
- Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".
- Boring caved and dry at 3.5 feet b.e.g.s. upon completion.
- Test boring backfilled with auger cuttings upon completion.

 <b>DUFFIELD ASSOCIATES</b> <i>Consultants in the Geosciences</i>				<b>TEST BORING TB-21</b> (Page 1 of 1)								
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC				Date Started : May 28, 2010 Date Completed : May 28, 2010 Logged by : TRA Weather : Cloudy, windy, 70's Driller/Agency : W. Proud/Feldmann Bothers		Drilling Equipment : ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation : 32 feet						
Depth in feet	Surf. Elev. 32 ft	GRAPHIC	USCS	Sample Condition <input checked="" type="checkbox"/> Remolded	Water Levels	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL
DESCRIPTION												
0				Topsoil (6.5 inches)								
30			CL	Brown, light brown, orange-brown, silty CLAY, trace to little fine to medium sand (moist)			<input checked="" type="checkbox"/>	S-1	1-2-3	1.0		
5			CH	Purplish light gray, orange-brown, mottled CLAY, trace fine sand (moist)			<input checked="" type="checkbox"/>	S-2	3-4-6	1.5	36.3	97.1
25				Purplish light gray, orange-brown, yellow-brown, mottled CLAY (moist)			<input checked="" type="checkbox"/>	S-3	3-5-7	1.5		
10				Pink-red, yellow-brown, yellow-gray, mottled fine to medium SAND, and silty clay, trace coarse sand (moist)			<input checked="" type="checkbox"/>	S-4	3-5-6	1.5		
20			SM	Light gray, green, orange-brown "salt & pepper" fine to medium SAND, little to trace coarse sand, trace silt (moist, Apparent Vincentown Fm)			<input checked="" type="checkbox"/>	S-5	7-11-10	1.4		
15				Light gray, green, orange-brown "salt & pepper" fine to medium SAND, little to trace coarse sand, trace silt (moist, Apparent Vincentown Fm)			<input checked="" type="checkbox"/>	S-6	12-14-17	1.5		
20												
10												
25												
5												
30												
0												
35												
-5												
40												

NOTES:  
 1. Test boring terminated at ± 20 feet b.e.g.s. (below existing ground surface)  
 2. Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".  
 3. Boring caved and dry at 8.7 feet b.e.g.s. upon completion.  
 4. Test boring backfilled with auger cuttings upon completion.

<b>DUFFIELD ASSOCIATES</b> <small>Consultants in the Geosciences</small>				<b>TEST BORING TB-22</b> (Page 1 of 1)								
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC				Date Started : May 28, 2010 Date Completed : May 28, 2010 Logged by : TRA Weather : Cloudy, windy, 70's Driller/Agency : W. Proud/Feldmann Bothers		Drilling Equipment : ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation : 30 feet						
Depth in feet	Surf. Elev. 30 ft	GRAPHIC	USCS	Sample Condition	Water Levels	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL
				<input checked="" type="checkbox"/> Remolded								
0	30											
			CL			<input checked="" type="checkbox"/>	S-1	2-3-5	0.9			
						<input checked="" type="checkbox"/>	S-2	4-6-9	1.5			
5	25		CH			<input checked="" type="checkbox"/>	S-3	2-4-5	1.5			
						<input checked="" type="checkbox"/>	S-4	2-3-5	1.5			
10	20		CL			<input checked="" type="checkbox"/>	S-5	5-7-7	1.4	6.9	8.2	
15	15		SP			<input checked="" type="checkbox"/>	S-6	10-15-16	1.4			
20	10											
25	5											
30	0											
35	-5											
40	-10											


**NOTES:**  
 1. Test boring terminated at ± 20 feet b.e.g.s. (below existing ground surface)  
 2. Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".  
 3. Boring caved and dry at 8.8 feet b.e.g.s. upon completion.  
 4. Test boring backfilled with auger cuttings upon completion.

 <b>DUFFIELD ASSOCIATES</b> <small>Consultants in the Geosciences</small>		<b>TEST BORING TB-23</b> (Page 1 of 1)										
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC				Date Started : June 7, 2010 Date Completed : June 7, 2010 Logged by : KMY Weather : Sunny, 70's Driller/Agency : W. Proud/Feldmann Bothers		Drilling Equipment : ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation : 52 feet						
Depth in feet	Surf. Elev. 52 ft	GRAPHIC	USCS	Sample Condition <input checked="" type="checkbox"/> Remolded	Water Levels	DESCRIPTION	SAMPLES  Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL
0						Topsoil (6 inches)						
50			ML			Light brown, dark brown SILT, little to some fine sand, trace medium sand, trace gravel (dry to moist)	<input checked="" type="checkbox"/> S-1	2-3-3	1.4			
5			SM			Orange, orange-brown fine SAND, little silt, trace gravel, trace mica (dry to moist)	<input checked="" type="checkbox"/> S-2	6-5-10	1.3			
45			MH			Orange, yellow, brown CLAY, trace fine sand (dry)	<input checked="" type="checkbox"/> S-3	3-4-5	1.3	61.6	96.7	
10						Light brown, orange CLAY, trace fine sand, trace silt (siltier towards bottom of sample), (dry)	<input checked="" type="checkbox"/> S-4	3-4-5	1.4			
40						Light brown, orange silty CLAY, trace fine sand (dry)	<input checked="" type="checkbox"/> S-5A	2-2-4	1.5			
15						Dark brown, red-brown, orange SILT, trace fine sand, trace silt (dry)	<input checked="" type="checkbox"/> S-5B					
35			CH			Dark gray, silty CLAY, trace fine sand, trace mica (dry)	<input checked="" type="checkbox"/> S-6	3-5-6	1.4			
20						Dark brown, silty CLAY, trace fine sand, trace mica (dry)	<input checked="" type="checkbox"/> S-7	3-5-6	1.5	57.4	99.1	
25						Dark brown, black silty CLAY, little to some fine sand, trace mica (dry to moist)	<input checked="" type="checkbox"/> S-8	3-5-7				
30												
20			SM			Brown, gray fine to medium SAND, little to some silt, trace coarse sand, trace gravel, trace mica (dry)	<input checked="" type="checkbox"/> S-9	8-19-16	1.3			
35												
15												
40												

TELOGPASSM% 3975.GC.GPJ DUFFIELD.GDT 7/11/10

NOTES:  
 1. Test boring terminated at ± 35 feet b.e.g.s. (below existing ground surface)  
 2. Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".  
 3. Water added for lubrication after S-8, no groundwater encountered in borehole.  
 4. Boring caved and dry at 3.1 feet b.e.g.s. upon completion.  
 5. Test boring backfilled with auger cuttings upon completion.




 <b>DUFFIELD ASSOCIATES</b> <small>Consultants in the Geosciences</small>			<b>TEST BORING TB-24</b> (Page 1 of 1)									
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC			Date Started : June 7, 2010 Date Completed : June 7, 2010 Logged by : KMY Weather : Sunny, 60's Driller/Agency : W. Proud/Feldmann Bothers		Drilling Equipment: ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation: 45 feet							
Depth in feet	Surf. Elev. 45 ft	GRAPHIC	USCS	Sample Condition	Water Levels	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL
				<input checked="" type="checkbox"/> Remolded								
DESCRIPTION												
0	45		ML	Topsoil (5.5 inches)		<input checked="" type="checkbox"/>	S-1	2-4-4	1.2			
			CL	Light brown clayey SILT, trace to little fine sand, trace mica, trace organics (small root fibers), (dry)		<input checked="" type="checkbox"/>	S-2A	3-7-9	1.3			
			SM	Light brown, orange-brown silty CLAY, trace fine sand (dry)		<input checked="" type="checkbox"/>	S-2B					
5	40		SM	Orange-brown fine to medium SAND, trace coarse sand, trace gravel, trace silt, trace mica (dry)		<input checked="" type="checkbox"/>	S-3	3-3-4	1.5			
				Light brown silty CLAY, trace fine sand, trace mica (dry)		<input checked="" type="checkbox"/>	S-4	2-2-2	1.5			
10	35			Light brown, tan clayey SILT, trace to little fine sand (dry to moist)		<input checked="" type="checkbox"/>	S-5	1-2-2	1.5	31.2	97.7	
15	30		MH	Light brown, orange, yellow clayey SILT, trace to little medium to fine sand (moist)		<input checked="" type="checkbox"/>	S-6	2-2-3	1.5			
20	25			Light brown, dark brown, orange SILT, trace to little fine to medium sand, trace gravel (moist)		<input checked="" type="checkbox"/>	S-7	3-5-5	1.4			
25	20		SM	Light brown, brown fine to coarse SAND, some to and silt, trace gravel (moist)		<input checked="" type="checkbox"/>	S-8	11-10-17	1.1	14.3	10.0	
30	15			Orange-brown, yellow fine to medium SAND, little silt, trace coarse sand, trace gravel (moist)		<input checked="" type="checkbox"/>						
35	10											
40	5											

**NOTES:**

- Test boring terminated at ± 30 feet b.e.g.s. (below existing ground surface)
- Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".
- Boring caved and dry at 8.6 feet b.e.g.s. upon completion.



4. Test boring backfilled with auger cuttings upon completion.

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 3975.GC.GPJ DUFFIELD.GDT 7/7/10

 <b>DUFFIELD ASSOCIATES</b> <i>Consultants in the Geosciences</i>				<b>TEST BORING TB-25</b> (Page 1 of 1)										
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC				Date Started : June 7, 2010 Date Completed : June 7, 2010 Logged by : KMY Weather : Sunny, 70's Driller/Agency : W. Proud/Feldmann Bothers		Drilling Equipment: ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation: 37 feet								
Depth in feet	Surf. Elev. 37 ft	GRAPHIC	USCS	Sample Condition		Water Levels	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL	
				<input checked="" type="checkbox"/> Remolded										
DESCRIPTION														
0														
35			CH				<input checked="" type="checkbox"/>	S-1	3-6-10	1.4				
								<input checked="" type="checkbox"/>	S-2	2-2-4	1.3			
5								<input checked="" type="checkbox"/>	S-3	2-2-3	1.5			
30								<input checked="" type="checkbox"/>	S-4	2-2-3	1.5			
10							<input checked="" type="checkbox"/>	S-5	2-2-3	1.5				
25														
15			MH				<input checked="" type="checkbox"/>							
20														
20														
15														
25														
10														
30														
5														
35														
0														
40														



**NOTES:**

1. Test boring terminated at ± 15 feet b.e.g.s. (below existing ground surface)
2. Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".
3. Boring caved and dry at 8.3 feet b.e.g.s. upon completion.
4. Test boring backfilled with auger cuttings upon completion.


 <b>DUFFIELD ASSOCIATES</b> Consultants in the Geosciences				<b>TEST BORING TB-26</b> (Page 1 of 1)									
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC				Date Started : June 7, 2010 Date Completed : June 7, 2010 Logged by : KMY Weather : Sunny, 70's Driller/Agency : W. Proud/Feldmann Bothers		Drilling Equipment: ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation: 30 feet							
Depth in feet	Surf. Elev. 30 ft	GRAPHIC	USCS	Sample Condition <input checked="" type="checkbox"/> Remolded	Water Levels	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL	
DESCRIPTION													
0	30		CH	Topsoil (5 inches) Orange-brown, yellow silty CLAY, some fine to coarse sand, trace gravel (dry)		<input checked="" type="checkbox"/>	S-1	4-5-10	0.6				
5	25			Orange-brown, red-brown silty CLAY, trace fine sand, trace mica (dry)		<input checked="" type="checkbox"/>	S-2	2-4-6	1.4				
				Light brown, orange brown silty CLAY, trace to little fine sand, trace gravel (iron oxide), (dry)		<input checked="" type="checkbox"/>	S-3	2-3-5	1.5				
10	20			MH	Light brown, white SILT, little to some fine sand, trace medium sand, trace gravel (iron oxide), (dry, more granular with depth)		<input checked="" type="checkbox"/>	S-4	3-3-8	1.2			
15	15				Orange-brown, gray, black fine SAND, little silt, trace mica (dry to moist)		<input checked="" type="checkbox"/>	S-5	12-17-24				
20	10												
25	5												
30	0												
35	-5												
40	-10												






TEL: 0363.553.3100 FAX: 0363.553.3101  
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**NOTES:**  
 1. Test boring terminated at ± 15 feet b.e.g.s. (below existing ground surface)  
 2. Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".  
 3. Boring caved and dry at 5.5 feet b.e.g.s. upon completion.  
 4. Test boring backfilled with auger cuttings upon completion.

 <b>DUFFIELD ASSOCIATES</b> <i>Consultants in the Geosciences</i>				<b>TEST BORING TB-27</b> (Page 1 of 1)									
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC				Date Started : June 7, 2010 Date Completed : June 7, 2010 Logged by : KMY Weather : Sunny, 70's Driller/Agency : W. Proud/Feldmann Bothers				Drilling Equipment: ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation: 35 feet					
Depth in feet	Surf. Elev. 35 ft	GRAPHIC	USCS	Sample Condition <input checked="" type="checkbox"/> Remolded	Water Levels	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL	
				DESCRIPTION									
0	35		CH	Topsoil (5.5 inches)									
				Light brown, yellow-brown silty CLAY, little gravel, trace fine sand (dry)									
5	30			Light brown, orange CLAY, trace fine sand (dry)									
				Light brown, orange CLAY, trace fine sand, trace mica (dry)									
10	25			Light brown, orange CLAY, trace fine sand (dry)									
				Light brown, orange silty CLAY, little to some fine sand, trace mica (dry to moist)									
15	20		SM	Orange, yellow fine SAND, little silt, trace medium to coarse sand, trace mica (dry to moist)									
20	15												
25	10												
30	5												
35	0												
40	-5												
NOTES: 1. Test boring terminated at ± 15 feet b.e.g.s. (below existing ground surface) 2. Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg". 3. Boring caved and dry at 10.4 feet b.e.g.s. upon completion. 4. Test boring backfilled with auger cuttings upon completion.													


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 <b>DUFFIELD ASSOCIATES</b> <small>Consultants in the Geosciences</small>		<b>TEST BORING TB-29</b> (Page 1 of 1)										
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC				Date Started : June 7, 2010 Date Completed : June 7, 2010 Logged by : KMY Weather : Sunny, 80's Driller/Agency : W. Proud/Feldmann Bothers				Drilling Equipment : ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation : 49 feet				
Depth in feet	Surf. Elev. 49 ft	GRAPHIC	USCS	Sample Condition	Water Levels	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL
				<input checked="" type="checkbox"/> Remolded								
DESCRIPTION												
0				Topsoil (7 inches)								
			ML	Light brown, orange-brown SILT, little to some fine sand, trace medium sand (dry)		<input checked="" type="checkbox"/>	S-1	2-3-6	1.1			
45				Orange-yellow fine SAND, some to and silt, trace mica (dry)		<input checked="" type="checkbox"/>	S-2	2-3-7	1.3			
5			SM	Orange-brown, yellow fine SAND, little to some silt, trace medium to coarse sand, trace gravel, trace mica (moist)		<input checked="" type="checkbox"/>	S-3	6-12-11	1.2			
40				Orange-brown, gray CLAY, trace fine sand (dry)		<input checked="" type="checkbox"/>	S-4	3-6-9	1.3			
10			CH									
35				Light brown, light gray SILT, little fine sand, trace mica (dry to moist)		<input checked="" type="checkbox"/>	S-5	1/0.9'-2				
15			MH									
30												
20												
25												
20												
30												
15												
35												
10												
40												
NOTES: 1. Test boring terminated at ± 15 feet b.e.g.s. (below existing ground surface) 2. Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg". 3. Boring caved and dry at 11.3 feet b.e.g.s. upon completion. 4. Test boring backfilled with auger cuttings upon completion.												

 <b>DUFFIELD ASSOCIATES</b> <small>Consultants in the Geosciences</small>				<b>TEST BORING P- 1</b> (Page 1 of 1)								
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC				Date Started : June 2, 2010 Date Completed : June 2, 2010 Logged by : TRA Weather : Clear, 80's Driller/Agency : W. Proud/Feldmann Bothers		Drilling Equipment : ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation : 51 feet						
Depth in feet	Surf. Elev. 51 ft	GRAPHIC	USCS	Sample Condition <input checked="" type="checkbox"/> Remolded	Water Levels	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL
				DESCRIPTION								
0				Topsoil (7 inches)								
50			CL	Brown, gray-brown, mottled silty CLAY of low plasticity, little fine to medium sand (moist)								
2												
48			SM	Gray-brown, orange-brown, light gray fine SAND, and clayey SILT, trace coarse sand								
4												
46												
6				Light gray, orange-brown, brown fine SAND, some silt, trace coarse sand, trace gravel (moist)								
44												
8			CH	Light blue-gray, orange-brown, mottled CLAY, trace fine sand (moist)								
42												
10				Light blue-gray, orange-brown, mottled CLAY (moist)								
40												
12												
38												
14												
36												
16												
34												
18												
32												
20												
30												

**NOTES:**

1. Test boring terminated at ± 10 feet b.e.g.s. (below existing ground surface)
2. Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".
3. Boring caved and dry at 6.2 feet b.e.g.s. upon completion.
4. Test boring backfilled with auger cuttings upon completion.





 <b>DUFFIELD ASSOCIATES</b> Consultants in the Geosciences			TEST BORING P- 2									
			(Page 1 of 1)									
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC			Date Started : June 2, 2010 Date Completed : June 2, 2010 Logged by : TRA Weather : Clear, 80's Driller/Agency : W. Proud/Feldmann Bothers		Drilling Equipment : ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation : 51 feet							
Depth in feet	Surf. Elev. 51 ft	GRAPHIC	USCS	Sample Condition <input checked="" type="checkbox"/> Rammed	Water Levels	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL
DESCRIPTION												
0												
50												
2												
48			CH									
4												
46												
6												
44			CH									
8												
42												
10												
40												
12												
38												
14												
36												
16												
34												
18												
32												
20												
30												

TELOGPASSM% 3975.GC.GPJ DUFFIELD.GDT 7/7/10

NOTES:

- Test boring terminated at ± 10 feet b.e.g.s. (below existing ground surface)
- Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".
- Boring caved and dry at 4.2 feet b.e.g.s. upon completion.
- Test boring backfilled with auger cuttings upon completion.




 <b>DUFFIELD ASSOCIATES</b> <i>Consultants in the Geosciences</i>				<b>TEST BORING P- 3</b> (Page 1 of 1)										
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC				Date Started : June 2, 2010 Date Completed : June 2, 2010 Logged by : TRA Weather : Clear, 80's Driller/Agency : W. Proud/Feldmann Bothers				Drilling Equipment: ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation: 44 feet						
Depth in feet	Surf. Elev. 44 ft	GRAPHIC	USCS	Sample Condition		Water Levels		SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL
				<input checked="" type="checkbox"/> Remolded		DESCRIPTION								
0	44		CH	Topsoil (6.5 inches)					S-1	2-3-4	0.9	21.6	82.5	
2	42			Light brown, gray-brown, orange-brown, slightly mottled silty CLAY, trace fine sand, trace gravel (moist)										
4	40			Light brown, light gray, light red, orange-brown, mottled CLAY, little fine to coarse sand, trace gravel (moist)										
6	38			Light blue-gray, light brown, yellow-brown, slightly mottled silty CLAY, trace fine sand (moist)										
8	36			Light blue-gray, light brown, slightly mottled, silty CLAY, trace fine sand (moist)										
10	34								S-4	2-2-3	1.5			
12	32													
14	30													
16	28													
18	26													
20	24													

TELOGPASSIMP% 3975.GC.GPJ DUFFIELD.GDT 7/7/10


NOTES:

- Test boring terminated at ± 10 feet b.e.g.s. (below existing ground surface)
- Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".
- Boring caved and dry at 5.7 feet b.e.g.s. upon completion.
- Test boring backfilled with auger cuttings upon completion.

 <b>DUFFIELD ASSOCIATES</b> Consultants in the Geosciences			<b>TEST BORING P- 4</b> (Page 1 of 1)											
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC			Date Started : June 2, 2010 Date Completed : June 2, 2010 Logged by : TRA Weather : Clear, 80's Driller/Agency : W. Proud/Feldmann Bothers		Drilling Equipment : ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation : 39 feet									
			Depth in feet	Surf. Elev. 39 ft	GRAPHIC	USCS	Sample Condition <input checked="" type="checkbox"/> Remolded	Water Levels	DESCRIPTION	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)
0						Topsoil (5 inches)								
38														
2						Light blue-gray, light brown, orange-brown, mottled CLAY, trace fine sand, trace gravel (moist)	<input checked="" type="checkbox"/>	S-1	2-3-4	1.3	35.2	92.2		
36														
4						Light purplish-gray, light brown, slightly mottled silty CLAY, trace fine to medium sand (moist)	<input checked="" type="checkbox"/>	S-2	2-3-3	1.5				
34														
6						Light purplish-gray, light brown, slightly mottled silty CLAY, trace fine to medium sand (moist)	<input checked="" type="checkbox"/>	S-3	2-1-3	1.5				
32														
8						Light purplish-gray, light brown, slightly mottled silty CLAY, trace fine to medium sand (moist)	<input checked="" type="checkbox"/>	S-4	2-3-3	1.5				
30														
10														
28														
12														
26														
14														
24														
16														
22														
18														
20														
20														
18														

NOTES:

- Test boring terminated at ± 10 feet b.e.g.s. (below existing ground surface)
- Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".
- Boring caved and dry at approximately 6 feet b.e.g.s. upon completion.
- Test boring backfilled with auger cuttings upon completion.

 <b>DUFFIELD ASSOCIATES</b> <i>Consultants in the Geosciences</i>				<b>TEST BORING P- 5</b> (Page 1 of 1)									
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC				Date Started : June 3, 2010 Date Completed : June 3, 2010 Logged by : JPC Weather : Clear, Hot Driller/Agency : W. Proud/Feldmann Bothers		Drilling Equipment: ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation: 35 feet							
Depth in feet	Surf. Elev. 35 ft	GRAPHIC	USCS	Sample Condition	Water Levels	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL	
				<input checked="" type="checkbox"/> Remolded									DESCRIPTION
0													
34													
2			CL			<input checked="" type="checkbox"/>	S-1	3-3-5	1.5				
32													
4						<input checked="" type="checkbox"/>	S-2	2-3-3	1.5	59.5	94.1		
30													
6			CH			<input checked="" type="checkbox"/>	S-3	2-2-3	1.5				
28													
8						<input checked="" type="checkbox"/>	S-4	2-2-4	1.5				
26													
10													
24													
12													
22													
14													
20													
16													
18													
18													
16													
20													
14													













**NOTES:**

1. Test boring terminated at ± 10 feet b.e.g.s. (below existing ground surface)

2. Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".











3. Boring caved and dry at 8.6 feet b.e.g.s. upon completion.

4. Test boring backfilled with auger cuttings upon completion.

 <b>DUFFIELD ASSOCIATES</b> <i>Consultants in the Geosciences</i>				<b>TEST BORING P- 6</b> (Page 1 of 1)								
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC				Date Started : June 3, 2010 Date Completed : June 3, 2010 Logged by : JPC Weather : Clear, Hot Driller/Agency : W. Proud/Feldmann Bothers		Drilling Equipment : ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation : 32 feet						
Depth in feet	Surf. Elev. 32 ft	GRAPHIC	USCS	Sample Condition <input checked="" type="checkbox"/> Remolded	Water Levels	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL
DESCRIPTION												
0	32			Topsoil (6 inches)								
2	30		ML	Brown, redish-yellow SILT, little fine sand, trace to little medium to coarse sand (damp)			S-1A	2-4-6	1.1			
			SM	Brown, redish-brown fine to medium SAND, little silt, trace to little fine to medium gravel at top of stratum (dry)			S-1B					
4	28		MH	Light gray, redish-yellow CLAY/SILT, trace fine sand (damp, crumbly structure)			S-2	4-4-4	1.5			
6	26		MH	Purplish-gray, gray, redish-yellow CLAY/SILT, trace fine sand (damp, laminated & oxidized)			S-3	2-3-6	1.5			
8	24		SM	Yellow, redish-yellow, white, gray fine SAND and CLAY/SILT, trace medium sand (damp, oxidized, moist at the base of the spoon)			S-4	2-4-5	1.5			
10	22											
12	20											
14	18											
16	16											
18	14											
20	12											


NOTES:  
 1. Test boring terminated at ± 10 feet b.e.g.s. (below existing ground surface)  
 2. Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".  
 3. Boring caved and dry at 6.4 feet b.e.g.s. upon completion.  
 4. Test boring backfilled with auger cuttings upon completion.

003132-64

 <b>DUFFIELD ASSOCIATES</b> <small>Consultants in the Geosciences</small>			<b>TEST BORING P- 8</b> <small>(Page 1 of 1)</small>									
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC			Date Started : June 1, 2010 Date Completed : June 1, 2010 Logged by : EBS Weather : Clear, 80's Driller/Agency : W. Proud/Feldmann Bothers		Drilling Equipment: ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation: 32 feet							
Depth in feet	Surf. Elev. 32 ft	GRAPHIC	USCS	Sample Condition <input checked="" type="checkbox"/> Remolded	Water Levels	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL
DESCRIPTION												
0	32											
Topsoil (8 inches)												
2	30		SM				S-1	3-10-8	0.8			
4	28		CH				S-2	2-3-4	1.5			
Gray with brown silty CLAY, little fine sand, veins of dark brown fine to coarse sand												
6	26		CH				S-3	2-4-4	1.4			
Brown-gray silty CLAY, little to trace fine sand												
8	24		MH				S-4	2-3-4	1.3			
Brown clayey SILT and silty CLAY, trace fine sand veins of fine to coarse sand, (clump to wet fine to medium sand, little silt in bottom of sample)												
10	22											
12	20											
14	18											
16	16											
18	14											
20	12											



**NOTES:**

1. Test boring terminated at ± 10 feet b.e.g.s. (below existing ground surface)
2. Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".
3. Boring caved and dry at 5.6 feet b.e.g.s. upon completion.
4. Test boring backfilled with auger cuttings upon completion.

 <b>DUFFIELD ASSOCIATES</b> Consultants in the Geosciences				<b>TEST BORING P- 9</b> (Page 1 of 1)								
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC				Date Started : June 1, 2010 Date Completed : June 1, 2010 Logged by : TRA Weather : P. cloudy, windy, 80's Driller/Agency : W. Proud/Feldmann Bothers		Drilling Equipment: ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation: 37 feet						
Depth in feet	Surf. Elev. 37 ft	GRAPHIC	USCS	Sample Condition <input checked="" type="checkbox"/> Remolded	Water Levels	SAMPLES	Sample Number	Blows per 6 Inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL
DESCRIPTION												
0												
36			CL			<input checked="" type="checkbox"/>	S-1A	1-3-9	1.1			
2						<input checked="" type="checkbox"/>	S-1B					
34			SM			<input checked="" type="checkbox"/>	S-2A	15-9-5	1.2			
4						<input checked="" type="checkbox"/>	S-2B					
32			CH			<input checked="" type="checkbox"/>	S-3A	3-5-4	1.5			
6			SC			<input checked="" type="checkbox"/>	S-3B					
30						<input checked="" type="checkbox"/>	S-4	2-2-3	1.5			
8			CH			<input checked="" type="checkbox"/>						
28												
10												
26												
12												
24												
14												
22												
16												
20												
18												
20												
16												


**NOTES:**

- Test boring terminated at ± 10 feet b.e.g.s. (below existing ground surface)
- Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".
- Boring caved and dry at 4.9 feet b.e.g.s. upon completion.
- Test boring backfilled with auger cuttings upon completion.


 <b>DUFFIELD ASSOCIATES</b> <i>Consultants in the Geosciences</i>		<b>TEST BORING P-10</b> (Page 1 of 1)											
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC				Date Started : June 1, 2010 Date Completed : June 1, 2010 Logged by : TRA Weather : P. cloudy, windy, 80's Driller/Agency : W. Proud/Feldmann Bothers		Drilling Equipment: ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation: 44 feet							
Depth in feet	Surf. Elev. 44 ft	GRAPHIC	USCS	Sample Condition <input checked="" type="checkbox"/> Remolded	Water Levels	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL	
DESCRIPTION													
0	44		CH	Topsoil (5.5 inches)									
2	42			Orange-brown, light gray, mottled CLAY, little fine sand, trace gravel (moist, blocky structure)				<input checked="" type="checkbox"/>	S-1	1-3-3	0.8	28.1	78.4
4	40			Light brown, light blue-gray, yellow-brown, mottled CLAY, trace fine sand (moist)				<input checked="" type="checkbox"/>	S-2	2-4-4	1.3		
6	38			Light purplish-gray, orange-brown, mottled silty CLAY (moist)				<input checked="" type="checkbox"/>	S-3	2-2-3	1.5		
8	36			Light purplish-gray, orange-brown, mottled silty CLAY (moist)				<input checked="" type="checkbox"/>	S-4	2-2-2	1.5		
10	34												
12	32												
14	30												
16	28												
18	26												
20	24												

NOTES:  
 1. Test boring terminated at ± 10 feet b.e.g.s. (below existing ground surface)  
 2. Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".  
 3. Boring caved and dry at 4.5 feet b.e.g.s. upon completion.  
 4. Test boring backfilled with auger cuttings upon completion.



				TEST BORING P-11									
				(Page 1 of 1)									
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC				Date Started : June 1, 2010 Date Completed : June 1, 2010 Logged by : TRA Weather : P. cloudy, windy, 70's Driller/Agency : W. Proud/Feldmann Bothers		Drilling Equipment : ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation : 46 feet							
Depth in feet	Surf. Elev. 46 ft	GRAPHIC	USCS	Sample Condition <input checked="" type="checkbox"/> Remolded	Water Levels	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL	
				DESCRIPTION									
0	46												
2	44						S-1	1-2-3	0.7				
4	42						S-2	2-4-5	1.3				
6	40						S-3	2-3-3	1.7				
8	38						S-4	2-2-3	1.6				
10	36												
12	34												
14	32												
16	30												
18	28												
20	26												











NOTES:  
 1. Test boring terminated at ± 10 feet b.e.g.s. (below existing ground surface)  
 2. Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".  
 3. Boring caved and dry at 3.9 feet b.e.g.s. upon completion.  
 4. Test boring backfilled with auger cuttings upon completion.

 <b>DUFFIELD ASSOCIATES</b> <small>Consultants In the Geosciences</small>				<b>TEST BORING P-12</b> (Page 1 of 1)								
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC				Date Started : June 1, 2010 Date Completed : June 1, 2010 Logged by : TRA Weather : P. cloudy, windy, 70's Driller/Agency : W. Proud/Feldmann Bothers		Drilling Equipment : ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation: 43 feet						
Depth in feet	Surf. Elev. 43 ft	GRAPHIC	USCS	Sample Condition <input checked="" type="checkbox"/> Remolded	Water Levels	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL
				DESCRIPTION								
0												
42												
2							S-1	2-4-6	1.3			
40												
4							S-2	3-5-6	0.9			
38												
6							S-3	2-2-3	1.7			
36												
8							S-4	2-2-2	1.7			
34												
10												
32												
12												
30												
14												
28												
16												
26												
18												
24												
20												
22												

**NOTES:**

- Test boring terminated at ± 10 feet b.e.g.s. (below existing ground surface)
- Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".
- Boring caved and dry at 4.1 feet b.e.g.s. upon completion.

4. Test boring backfilled with auger cuttings upon completion.

 <b>DUFFIELD ASSOCIATES</b> <i>Consultants in the Geosciences</i>				<b>TEST BORING P-13</b> (Page 1 of 1)								
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC				Date Started : June 1, 2010 Date Completed : June 1, 2010 Logged by : TRA Weather : P. cloudy, windy, 70's Driller/Agency : W. Proud/Feldmann Bothers		Drilling Equipment : ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation : 46 feet						
Depth in feet	Surf. Elev. 46 ft	GRAPHIC	USCS	Sample Condition <input checked="" type="checkbox"/> Remolded	Water Levels	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL
DESCRIPTION												
0	46											
Topsoil (7 inches)												
2	44		SM				S-1	2-3-3	0.9			
Brown, dark brown fine to medium SAND, some to and clayey silt, trace to little coarse sand and gravel (moist)												
4	42		SM				S-2	8-23-14	1.1			
Orange-brown, gray-brown, gray fine to coarse SAND, little gravel, trace to little silt (moist)												
6	40		CH				S-3	2-4-4	1.5			
Gray-brown, orange-brown, slightly mottled silty CLAY, trace fine sand (moist)												
8	38		CH				S-4	1-2-3	1.5			
Light purplish-gray, yellow-brown, orange-brown, dark red-brown, slightly mottled silty CLAY, trace to little fine to medium sand, trace iron oxide in large natural fissures (moist)												
10	36											
12	34											
14	32											
16	30											
18	28											
20	26											

NOTES:  
 1. Test boring terminated at ± 10 feet b.e.g.s. (below existing ground surface)  
 2. Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".  
 3. Boring caved and dry at 4.2 feet b.e.g.s. upon completion.  
 4. Test boring backfilled with auger cuttings upon completion.



## **APPENDIX C**

### **TEST PIT LOGS (15)**

*Printed on Recycled Stock* ♻️

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### TEST PIT DESCRIPTIVE LOG

PROJECT: Proposed Odessa School Campus PROJECT NO.: 3975.GC  
CLIENT: Appoquinimink School District DATE: June 10, 2010  
LOGGED BY: MPN - TRA

Test Pit No.	Depth Range (feet below existing ground surface)	Generalized Soil Description
IT-1	0 – 0.7	TOPSOIL/ rootmat (brown silt, some fine to medium sand, trace clay, little organics, trace fine gravel, damp)
Elev. ±52 feet	0.7 – 1.7 Sample No. 1	Reddish brown, reddish yellow fine to medium SAND, some silty clay, trace fine gravel (faintly mottled, stiff, damp) USCS: SC
	1.7 – 4 Sample No. 2	Gray, reddish brown CLAY, some silt, trace fine sand (visible iron staining, trace organics, trace mica, blocky, stiff, dry to damp) USCS: CL
	4 – 5.8 Sample No. 3 @ 4 – 5.5 Sample No. 4 @ 5.5 – 5.8	Reddish brown, reddish yellow fine to medium SAND, little to some silt, little fine to coarse gravel, trace coarse sand (trace to little iron staining, damp) <ul style="list-style-type: none"> <li>Moisture: 13.5%</li> <li>Percent passing No. 270 Sieve: 16.8%</li> <li>USDA: Loamy Sand</li> <li>USCS: SM</li> </ul>
	5.8 – 7.6 Sample No. 5 @ 6.5	Dark orange-brown, brown, dark red-brown fine to coarse SAND, little gravel, trace cobbles, little silt (moist) USCS: SM
	7.6 – — Sample No. 6 @ 9	Orange-brown, red-brown, light blue-gray, mottled CLAY, trace fine sand (moist, blocky) USCS: CH

#### NOTES:

- (1) Test pit excavated by Feldmann Brothers' personnel utilizing a rubber tired backhoe.
- (2) Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".
- (3) Test pit terminated approximately 9.5 feet below the existing ground surface (b.e.g.s.)
- (4) No groundwater seepage was observed in the test pit to a depth of 9.5 ft b.e.g.s..
- (5) Single ring infiltration test performed at approximately 5.5 feet b.e.g.s.
- (6) Test pit backfilled with excavated soils upon completion.



### TEST PIT DESCRIPTIVE LOG

PROJECT:	Proposed Odessa School Campus	PROJECT NO.:	3975.GC
CLIENT:	Appoquinimink School District	DATE:	June 10, 2010
LOGGED BY:	MPN - TRA		

Test Pit No.	Depth Range (feet below existing ground surface)	Generalized Soil Description
IT-2	0 – 0.6	TOPSOIL/ rootmat (brown silt, little fine to medium sand, trace clay, trace organics (damp)
Elev. ±52 feet	0.6 – 2.5 Sample No. 1	Reddish brown, brown, light gray SILT/CLAY, some fine sand (trace iron staining, faint to distinct mottles, grain size increasing with depth) USCS: ML
	2.5 – 5 Sample No. 2	Reddish brown, reddish yellow fine to medium SAND, little to some silt, little to some coarse gravel to cobbles (damp, purple clay balls around gravel, visible iron staining) USCS: SM
	5 – 6 Sample No. 3 @ 5 – 5.2 Sample No. 4 @ 5.2 – 5.7	Yellow-brown, orange-brown, red-brown fine to medium SAND, little silt, trace coarse sand, trace gravel (moist) <ul style="list-style-type: none"> <li>Moisture: 10.7%</li> <li>Percent passing No. 270 Sieve: 13.1%</li> <li>USDA: Loamy Sand</li> <li>USCS: SM</li> </ul>
	6 – 7	Dark red-brown, brown fine to coarse SAND, little gravel, trace to little silt, trace cobbles (wet) USCS: SM
	7 – --- Sample No. 5 @ 8	Light blue-gray, orange-brown, mottled CLAY, trace fine sand (moist) USCS: CH

#### NOTES:

- (1) Test pit excavated by Feldmann Brothers' personnel utilizing a rubber tired backhoe.
- (2) Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".
- (3) Test pit terminated approximately 9.5 feet below the existing ground surface (b.e.g.s.)
- (4) No groundwater seepage was observed in the test pit to a depth of 9.5 ft b.e.g.s..
- (5) Single ring infiltration test performed at approximately 5.2 feet b.e.g.s.
- (6) Test pit backfilled with excavated soils upon completion.



### TEST PIT DESCRIPTIVE LOG

PROJECT:	Proposed Odessa School Campus	PROJECT NO.:	3975.GC
CLIENT:	Appoquinimink School District	DATE:	June 8, 2010
LOGGED BY:	MPN		

Test Pit No.	Depth Range (feet below existing ground surface)	Generalized Soil Description
IT-3	0 – 0.5	TOPSOIL/ rootmat (brown, light brown fine to medium sand, some silt, trace clay, trace mica, damp)
Elev. ±50 feet	0.5 – 4 Sample No. 1	Light brown, reddish brown fine to medium SAND, and coarse to very coarse rounded gravel, and 3-5" cobbles, some silt (silt increasing with depth, gravel and sand cemented together). USCS: SM
	4 – --- Sample No. 2 @ 4-5	Light gray, reddish brown, prominently mottled CLAY, some silt, trace fine sand (soft, damp, no mottling and gray below 6 feet) <ul style="list-style-type: none"> <li>Moisture: 31.2%</li> <li>Percent passing No. 270 Sieve: 94.3%</li> <li>USDA: Clay</li> <li>USCS: CH</li> </ul>

#### NOTES:

- (1) Test pit excavated by Feldmann Brothers' personnel utilizing a rubber tired backhoe.
- (2) Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".
- (3) Test pit terminated approximately 8.5 feet below the existing ground surface (b.e.g.s.)
- (4) No groundwater seepage was observed in the test pit to a depth of 8.5 ft b.e.g.s..
- (5) Single ring infiltration test performed at approximately 5 feet b.e.g.s.
- (6) Test pit backfilled with excavated soils upon completion.



### TEST PIT DESCRIPTIVE LOG

PROJECT:	Proposed Odessa School Campus	PROJECT NO.:	3975.GC
CLIENT:	Appoquinimink School District	DATE:	June 14, 2010
LOGGED BY:	TRA		

Test Pit No.	Depth Range (feet below existing ground surface)	Generalized Soil Description
IT-4	0 – 0.9	TOPSOIL
Elev. ±47 feet	0.9 – 2.3 Sample No. 1 @ 1.5	Gray-brown, yellow-brown, brown clayey SILT, little to some fine to medium sand, trace coarse sand and gravel (moist) USCS: ML
	2.3 – --- Sample No. 2 @ 5.2 Sample No. 3 @ 5.3 - 5.5 Sample No. 4 @ 9	Light blue-gray, orange-brown, mottled CLAY, trace fine sand (moist, blocky) <ul style="list-style-type: none"> <li>• Moisture: 32.3%</li> <li>• Percent passing No. 270 Sieve: 95.0%</li> <li>• USDA: Clay</li> <li>• USCS: CH</li> </ul>

#### NOTES:

- (1) Test pit excavated by Feldmann Brothers' personnel utilizing a rubber tired backhoe.
- (2) Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".
- (3) Test pit terminated approximately 9.5 feet below the existing ground surface (b.e.g.s.)
- (4) No groundwater seepage was observed in the test pit to a depth of 9.5 ft b.e.g.s..
- (5) Single ring infiltration test performed at approximately 5.2 feet b.e.g.s.
- (6) Test pit backfilled with excavated soils upon completion.





### TEST PIT DESCRIPTIVE LOG

PROJECT:	Proposed Odessa School Campus	PROJECT NO.:	3975.GC
CLIENT:	Appoquinimink School District	DATE:	June 8, 2010
LOGGED BY:	MPN		

Test Pit No.	Depth Range (feet below existing ground surface)	Generalized Soil Description
IT-5	0 -- 1.3	TOPSOIL/ rootmat (brown, light brown silt, trace fine sand, trace clay, trace mica, trace fine rounded gravel, dry to damp)
Elev. ±51 feet	1.3 -- 2 Sample No. 1	Light brown, yellow-brown, reddish brown SILT, little clay, trace fine sand (distinct reddish mottles, stiff, dry to damp) USCS: ML
	2 -- 4.5 Sample No. 2	Gray, reddish brown CLAY, some silt, trace to little fine sand, trace iron concretions, trace gravel (prominent mottling, red-brown iron staining veins, stiff, dry-damp) USCS: CL
	4.5 -- --- Sample No. 3 @ 4.5 - 7	Gray, reddish brown CLAY, trace fine sand (more gray with depth, soft, damp) <ul style="list-style-type: none"> <li>Moisture: 32.8%</li> <li>Percent passing No. 270 Sieve: 95.6%</li> <li>USDA: Clay</li> <li>USCS: CH</li> </ul>

#### NOTES:

- (1) Test pit excavated by Feldmann Brothers' personnel utilizing a rubber tired backhoe.
- (2) Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".
- (3) Test pit terminated approximately 11 feet below the existing ground surface (b.e.g.s.)
- (4) No groundwater seepage was observed in the test pit to a depth of 11 ft b.e.g.s..
- (5) Single ring infiltration test performed at approximately 7 feet b.e.g.s..
- (6) Test pit backfilled with excavated soils upon completion.



### TEST PIT DESCRIPTIVE LOG

PROJECT:	Proposed Odessa School Campus	PROJECT NO.:	3975.GC
CLIENT:	Appoquinimink School District	DATE:	June 11, 2010
LOGGED BY:	TRA		

Test Pit No.	Depth Range (feet below existing ground surface)	Generalized Soil Description
IT-6	0 – 0.9	TOPSOIL
Elev. ±51 feet	0.9 – 3.2 Sample No. 1 @ 2	Brown, gray-brown fine to medium SAND, little silt, trace gravel, trace cobbles, trace coarse sand (moist) USCS: SM
	3.2 – 5 Sample No. 2 @ 4	Light brown, yellow-brown, orange-brown fine to medium SAND, little to trace silt (moist) USCS: SM
	5 – 6.5 Sample No. 3 @ 6	Orange-brown, dark red-brown, brown, yellow-brown fine to coarse SAND, little to some gravel, trace cobbles, trace to little silt (moist) USCS: SM
	6.5 – — Sample No. 4 @ 7.5 Sample No. 5 @ 7.6 – 7.8 Sample No. 6 @ 11.5	Light gray, orange-brown, mottled CLAY, trace fine sand (purplish gray with depth, moist, blocky) <ul style="list-style-type: none"> <li>Moisture: 45.6%</li> <li>Percent passing No. 270 Sieve: 96.3%</li> <li>USDA: Clay</li> <li>USCS: CH</li> </ul>

#### NOTES:

- (1) Test pit excavated by Feldmann Brothers' personnel utilizing a rubber tired backhoe.
- (2) Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".
- (3) Test pit terminated approximately 11.8 feet below the existing ground surface (b.e.g.s.)
- (4) Slight groundwater seepage was observed in the test pit below a depth of 10.8 ft b.e.g.s. 2 hours after completion of excavation.
- (5) Single ring infiltration test performed at approximately 7.5 feet b.e.g.s.
- (6) Water level at 11.2 feet b.e.g.s., bottom of excavation at 11.5 feet b.e.g.s. 3 hours after completion of excavation.
- (7) Test pit backfilled with excavated soils upon completion.



### TEST PIT DESCRIPTIVE LOG

PROJECT: Proposed Odessa School Campus PROJECT NO.: 3975.GC  
CLIENT: Appoquinimink School District DATE: June 14, 2010  
LOGGED BY: TRA

Test Pit No.	Depth Range (feet below existing ground surface)	Generalized Soil Description
IT-7	0 – 0.8	TOPSOIL
Elev. ±47 feet	0.8 – 4.5 Sample No. 1 @ 3	Gray-brown, orange-brown, brown, gray, slightly mottled silty CLAY, trace to little fine to medium sand, trace gravel, trace cobbles (moist) USCS: CL
	4.5 – --- Sample No. 2 @ 5.6 Sample No. 3 @ 5.7 – 5.9 Sample No. 4 @ 10	Light blue-gray, orange-brown, slightly mottled CLAY, trace fine sand (trace cobbles, trace gravel near top of layer, moist, blocky) <ul style="list-style-type: none"> <li>Moisture: 38.5%</li> <li>Percent passing No. 270 Sieve: 99.8%</li> <li>USDA: Clay</li> <li>USCS: CH</li> </ul>

#### NOTES:

- (1) Test pit excavated by Feldmann Brothers' personnel utilizing a rubber tired backhoe.
- (2) Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".
- (3) Test pit terminated approximately 10 feet below the existing ground surface (b.e.g.s.)
- (4) No groundwater seepage was observed in the test pit to a depth of 10 ft b.e.g.s..
- (5) Single ring infiltration test performed at approximately 5.6 feet b.e.g.s.
- (6) Test pit backfilled with excavated soils upon completion.



### TEST PIT DESCRIPTIVE LOG

PROJECT:	Proposed Odessa School Campus	PROJECT NO.:	3975.GC
CLIENT:	Appoquinimink School District	DATE:	June 8, 2010
LOGGED BY:	MPN		

Test Pit No.	Depth Range (feet below existing ground surface)	Generalized Soil Description
IT-8	0 – 1	TOPSOIL/ rootmat (Light brown silt, trace fine sand, trace clay (dry, strongly mottled)
Elev. ±40 feet	1 – 2 Sample No. 1	Reddish brown SILT/CLAY, some fine to medium sand, trace fine gravel (damp, stiff consistency, very strongly mottled) USCS: CL
	2 – 3 Sample No. 2	Reddish brown, brown fine to medium SAND, and very coarse gravel, some silt (cemented matrix, dry) USCS: SM
	3 – — Sample No. 3	Reddish brown CLAY, little very fine sand (soft consistency, damp, distinct gray mottles) <ul style="list-style-type: none"> <li>Moisture: 32.1%</li> <li>Percent passing No. 270 Sieve: 87.4%</li> <li>USDA: Clay Loam</li> <li>USCS: CH</li> </ul>

#### NOTES:

- (1) Test pit excavated by Feldmann Brothers' personnel utilizing a rubber tired backhoe.
- (2) Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".
- (3) Test pit terminated approximately 8 feet below the existing ground surface (b.e.g.s.)
- (4) No groundwater seepage was observed in the test pit to a depth of 8 ft b.e.g.s..
- (5) Single ring infiltration test performed at approximately 5 feet b.e.g.s.
- (6) Test pit backfilled with excavated soils upon completion.



### TEST PIT DESCRIPTIVE LOG

PROJECT: Proposed Odessa School Campus PROJECT NO.: 3975.GC  
CLIENT: Appoquinimink School District DATE: June 11, 2010  
LOGGED BY: TRA

Test Pit No.	Depth Range (feet below existing ground surface)	Generalized Soil Description
IT-9	0 – 0.9	TOPSOIL
Elev. ±41 feet	0.9 – 3.9 Sample No. 1 @ 2 - 3	Brown, light brown, slightly mottled silty CLAY, little fine to medium sand, trace gravel (moist) USCS: CL
	3.9 – --- Sample No. 2 @ 5 Sample No. 3 @ 5.2 – 5.4 Sample No. 4 @ 9	Light gray, brown, orange-brown, slightly mottled silty CLAY, trace fine sand (moist, blocky, becoming purplish gray with depth) <ul style="list-style-type: none"> <li>• Moisture: 45.7%</li> <li>• Percent passing No. 270 Sieve: 97.6%</li> <li>• USDA: Silty Clay</li> <li>• USCS: CH</li> </ul>

#### NOTES:

- (1) Test pit excavated by Feldmann Brothers' personnel utilizing a rubber tired backhoe.
- (2) Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".
- (3) Test pit terminated approximately 10.3 feet below the existing ground surface (b.e.g.s.)
- (4) No groundwater seepage was observed in the test pit to a depth of 10.3 ft b.e.g.s..
- (5) Single ring infiltration test performed at approximately 5 feet b.e.g.s.
- (6) Test pit backfilled with excavated soils upon completion.



### TEST PIT DESCRIPTIVE LOG

PROJECT: Proposed Odessa School Campus PROJECT NO.: 3975.GC  
CLIENT: Appoquinimink School District DATE: June 11, 2010  
LOGGED BY: TRA

Test Pit No.	Depth Range (feet below existing ground surface)	Generalized Soil Description
IT-10	0 – 0.9	TOPSOIL
Elev. ±42 feet	0.9 – 3.5 Sample No. 1 @ 2.5	Brown, gray-brown, yellow-brown fine to medium SAND, and silty clay, trace to little gravel, trace coarse sand, trace roots (moist) USCS: SC
	3.5 – Sample No. 2 @ 5 Sample No. 3 @ 5.2 – 5.5 Sample No. 4 @ 8.5	Yellow-brown, gray-brown, light gray, mottled silty CLAY, little fine sand (moist, blocky, becoming purplish gray, less sandy, less mottled with depth) <ul style="list-style-type: none"> <li>• Moisture: 45.9%</li> <li>• Percent passing No. 270 Sieve: 83.2%</li> <li>• USDA: Clay</li> <li>• USCS: CH</li> </ul>

#### NOTES:

- (1) Test pit excavated by Feldmann Brothers' personnel utilizing a rubber tired backhoe.
- (2) Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".
- (3) Test pit terminated approximately 9.5 feet below the existing ground surface (b.e.g.s.)
- (4) No groundwater seepage was observed in the test pit to a depth of 9.5 ft b.e.g.s..
- (5) Single ring infiltration test performed at approximately 5 feet b.e.g.s.
- (6) Test pit backfilled with excavated soils upon completion.



### TEST PIT DESCRIPTIVE LOG

PROJECT:	Proposed Odessa School Campus	PROJECT NO.:	3975.GC
CLIENT:	Appoquinimink School District	DATE:	June 8, 2010
LOGGED BY:	MPN		

Test Pit No.	Depth Range (feet below existing ground surface)	Generalized Soil Description
IT-11	0 – 1	TOPSOIL (Brown, light brown fine to medium sand, little to some silt, trace organics, damp)
Elev. ±41 feet	1 – 4 Sample No. 1 @ 1 – 2.5 Sample No. 2 @ 2.5 – 3 Sample No. 3 @ 3 – 4	Reddish brown, reddish yellow fine to medium SAND, little to some silt/clay, trace mica (damp, varicolored cobbles and cemented soil at bottom of layer) USCS: SM
	4 – — Sample No. 4 @ 4 – 5.3	Reddish brown SILT/CLAY trace fine sand (faint gray mottles, damp, soft, becoming gray and wet below 7.5 feet) <ul style="list-style-type: none"> <li>Moisture: 29.4%</li> <li>Percent passing No. 270 Sieve: 96.5%</li> <li>USDA: Silty Clay Loam</li> <li>USCS: MH</li> </ul>

#### NOTES:

- (1) Test pit excavated by Feldmann Brothers' personnel utilizing a rubber tired backhoe.
- (2) Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".
- (3) Test pit terminated approximately 8 feet below the existing ground surface (b.e.g.s.)
- (4) No groundwater seepage was observed in the test pit to a depth of 8 ft b.e.g.s..
- (5) Single ring infiltration test performed at approximately 5.3 feet b.e.g.s.
- (6) Test pit backfilled with excavated soils upon completion.



### TEST PIT DESCRIPTIVE LOG

PROJECT:	Proposed Odessa School Campus	PROJECT NO.:	3975.GC
CLIENT:	Appoquinimink School District	DATE:	June 10, 2010
LOGGED BY:	MPN - TRA		

Test Pit No.	Depth Range (feet below existing ground surface)	Generalized Soil Description
IT-12	0 – 1	TOPSOIL/ rootmat (Brown silt, trace to little fine to medium sand, trace clay, trace organics, damp)
Elev. ±48 feet	1 – 3	Reddish brown SILT/CLAY, trace to little fine sand (faintly mottled, damp, stiff consistency) USCS: CL
	3 – 6.5 Sample No. 1	Reddish brown-gray, reddish yellow fine to medium SAND, little to some silt/clay, trace to little iron stone staining, trace fine gravel (semi cemented, stiff consistency, damp to dry, increasing fines with depth) USCS: SC
	6.5 – 10 Sample No. 2 Sample No. 3 @ 9 – 9.4	Brown, reddish brown-gray fine SAND, some gravel, some silty clay layers, trace cobbles (damp to wet below test) <ul style="list-style-type: none"> <li>Moisture: 12.2%</li> <li>Percent passing No. 270 Sieve: 21.2%</li> <li>USDA: Loamy Sand</li> <li>USCS: SM</li> </ul>
	10 – --- Sample No. 4 @ 11	Orange-brown, light blue-gray silty CLAY, trace fine sand (moist, mottled) USCS: CH

#### NOTES:

- (1) Test pit excavated by Feldmann Brothers' personnel utilizing a rubber tired backhoe.
- (2) Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".
- (3) Test pit terminated approximately 12 feet below the existing ground surface (b.e.g.s.)
- (4) No groundwater seepage was observed in the test pit to a depth of 12 ft b.e.g.s..
- (5) Single ring infiltration test performed at approximately 9 feet b.e.g.s.
- (6) Electric cable/conduit and masonry block found approximately 4 feet b.e.g.s.
- (7) Test pit backfilled with excavated soils upon completion.





### TEST PIT DESCRIPTIVE LOG

PROJECT: Proposed Odessa School Campus PROJECT NO.: 3975.GC  
CLIENT: Appoquinimink School District DATE: June 10, 2010  
LOGGED BY: MPN - TRA

Test Pit No.	Depth Range (feet below existing ground surface)	Generalized Soil Description
IT-13	0 – 1	TOPSOIL/ rootmat (brown, light brown silt, some fine to medium sand, trace clay, trace organics, damp)
Elev. ±49 feet	1 – 2.6 Sample No. 1	Reddish brown, brown, reddish yellow fine to medium SAND, some silt/clay, trace gravel (medium stiff consistency, damp, faint mottles) USCS: SC
	2.6 – 3.9 Sample No. 2	Reddish-brown, gray SILT/CLAY, little fine to medium sand trace gravel, trace organics (stiff consistency, dry to damp, prominent mottling, significant iron staining, blocky) USCS: CL
	3.9 – 6 Sample No. 3 @ 3.9 – 5.4 Sample No. 4 @ 5.4 – 5.6	Light gray, reddish brown silty CLAY, and fine sand, trace gravel (less mottled, dry to damp, very stiff consistency) <ul style="list-style-type: none"> <li>Moisture: 18.5%</li> <li>Percent passing No. 270 Sieve: 66.3%</li> <li>USDA: Clay Loam</li> <li>USCS: CL</li> </ul>
	6 – — Sample No. 5 @ 8	Light gray silty CLAY, trace fine sand (moist, iron stained layer at 6 feet) USCS: CH

#### NOTES:

- (1) Test pit excavated by Feldmann Brothers' personnel utilizing a rubber tired backhoe.
- (2) Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".
- (3) Test pit terminated approximately 10.5 feet below the existing ground surface (b.e.g.s.)
- (4) No groundwater seepage was observed in the test pit to a depth of 10.5 ft b.e.g.s..
- (5) Single ring infiltration test performed at approximately 5.4 feet b.e.g.s.
- (6) Test pit backfilled with excavated soils upon completion.



### TEST PIT DESCRIPTIVE LOG

PROJECT:	Proposed Odessa School Campus	PROJECT NO.:	3975.GC
CLIENT:	Appoquinimink School District	DATE:	June 11, 2010
LOGGED BY:	TRA		

Test Pit No.	Depth Range (feet below existing ground surface)	Generalized Soil Description
TP-1	0 – 0.5	TOPSOIL
Elev. ±47 feet	0.5 – 3.2 Sample No. 1 @ 2	Gray, red-brown, light blue-gray, mottled CLAY, trace fine to medium sand (moist, blocky) USCS: CL
	3.2 – 5.5 Sample No. 2 @ 3.5 Sample No. 3 @ 5.5	Gray, orange-brown, red-brown GRAVEL and medium to coarse SAND, little fine sand, little silt (moist) USCS: GM
	5.5 – --- Sample No. 4 @ 6 Sample No. 5 @ 11	Gray, orange-brown, slightly mottled CLAY, trace fine sand (moist, below 9' water visible in natural "fractures") USCS: CH

#### NOTES:

- (1) Test pit excavated by Feldmann Brothers' personnel utilizing a rubber tired backhoe.
- (2) Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".
- (3) Test pit terminated approximately 12 feet below the existing ground surface (b.e.g.s.)
- (4) Slight groundwater seepage was observed in the test pit below a depth of 9 ft b.e.g.s. 20 minutes after completion of excavation.
- (5) Water level at 11.5 feet, bottom of excavation at 12 feet 1 hour after completion of excavation.
- (6) Test pit backfilled with excavated soils upon completion.



**TEST PIT  
DESCRIPTIVE LOG**

PROJECT: Proposed Odessa School Campus PROJECT NO.: 3975.GC  
CLIENT: Appoquinimink School District DATE: June 11, 2010  
LOGGED BY: TRA

<u>Test Pit No.</u>	<u>Depth Range (feet below existing ground surface)</u>	<u>Generalized Soil Description</u>
TP-2	0 – 0.8	TOPSOIL
Elev. ±48 feet	0.8 – 5 Sample No. 1 @ 3'	Brown, orange-brown, gray-brown, slightly mottled silty CLAY, little fine to medium sand, trace gravel, trace cobbles (mosit) USCS: CL
	5 – — Sample No. 2 @ 7.5'	Orange-brown, gray-brown, mottled CLAY, trace fine sand (moist) USCS: CH

**NOTES:**

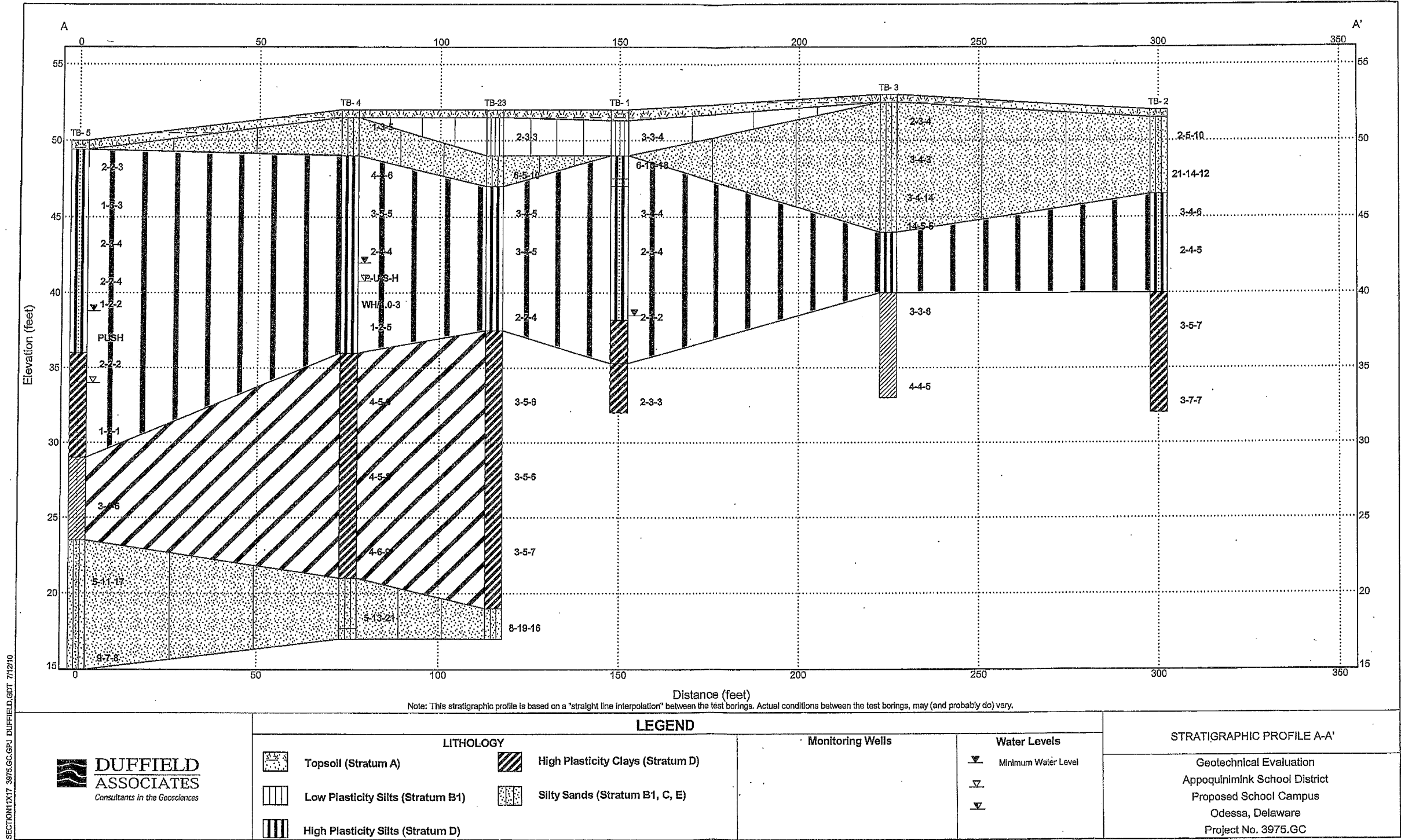
- (1) Test pit excavated by Feldmann Brothers' personnel utilizing a rubber tired backhoe.
- (2) Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".
- (3) Test pit terminated approximately 7.5 feet below the existing ground surface (b.e.g.s.)
- (4) Slight groundwater seepage was observed in the test pit below a depth of 6.8 ft b.e.g.s. at completion of excavation.
- (5) Water level at 7 feet b.e.g.s. bottom of excavation at 7.5 feet b.e.g.s. 2 hours after completion of excavation.
- (6) Test pit backfilled with excavated soils upon completion.

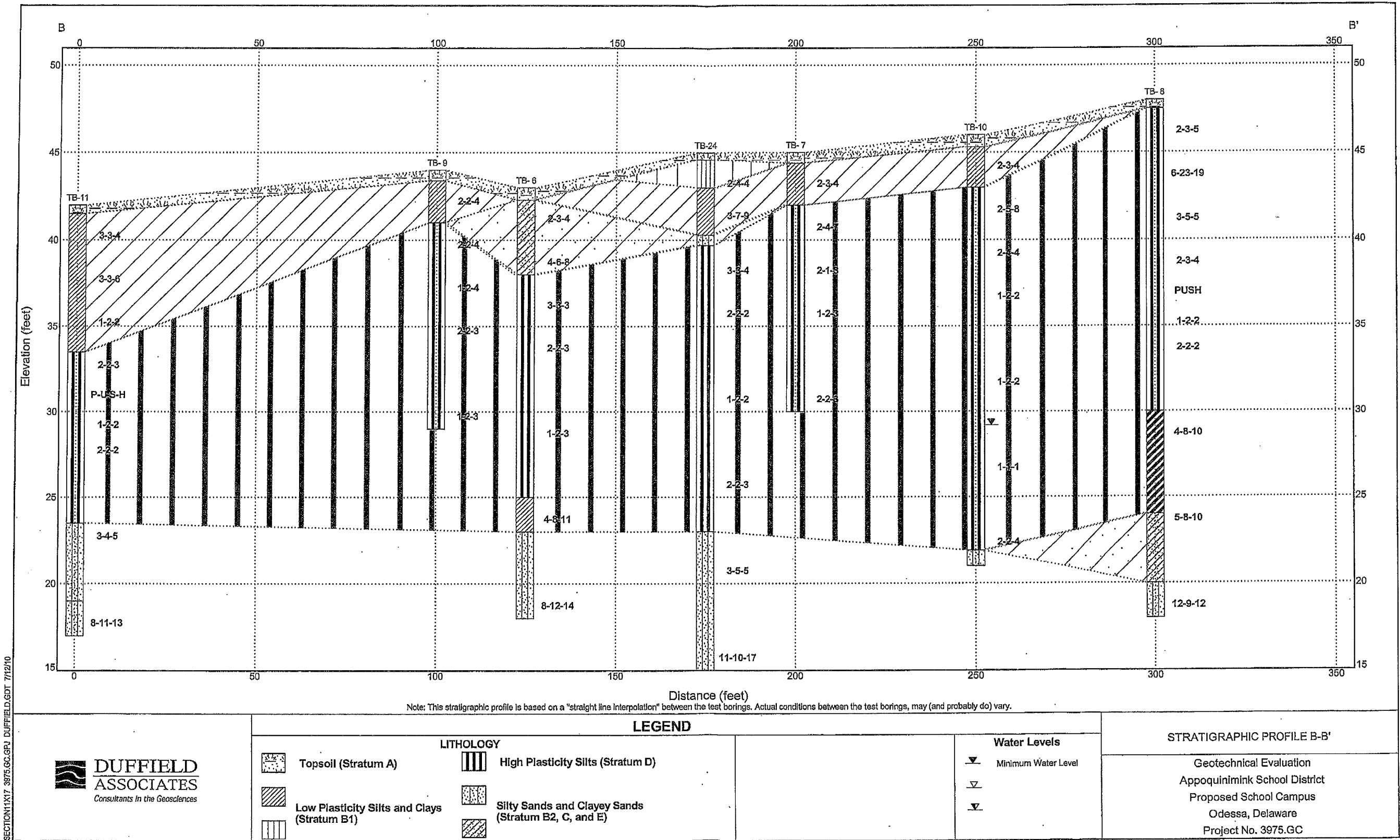


# **APPENDIX D**

## **STRATIGRAPHIC PROFILES (2)**

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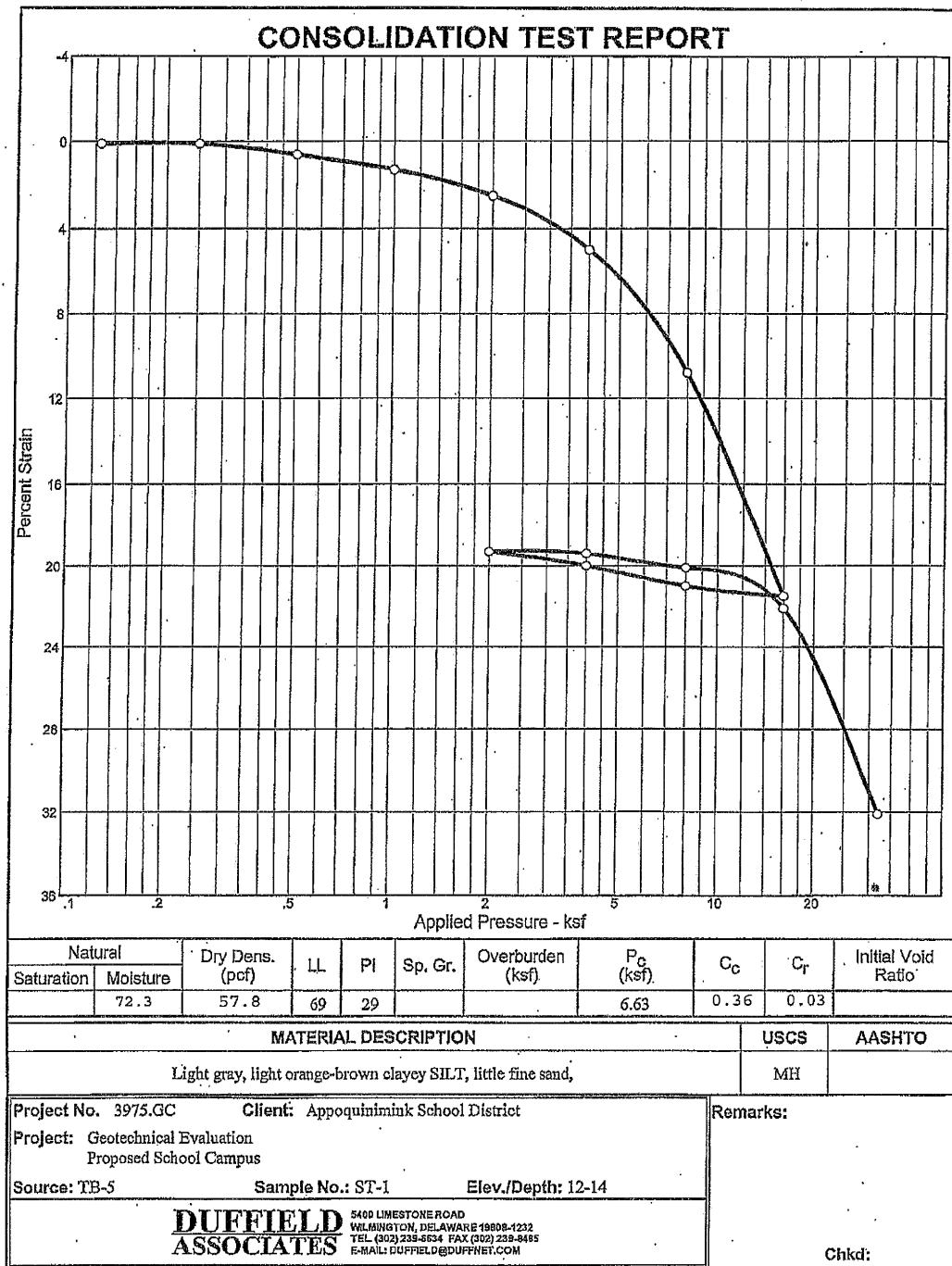


# **APPENDIX E**

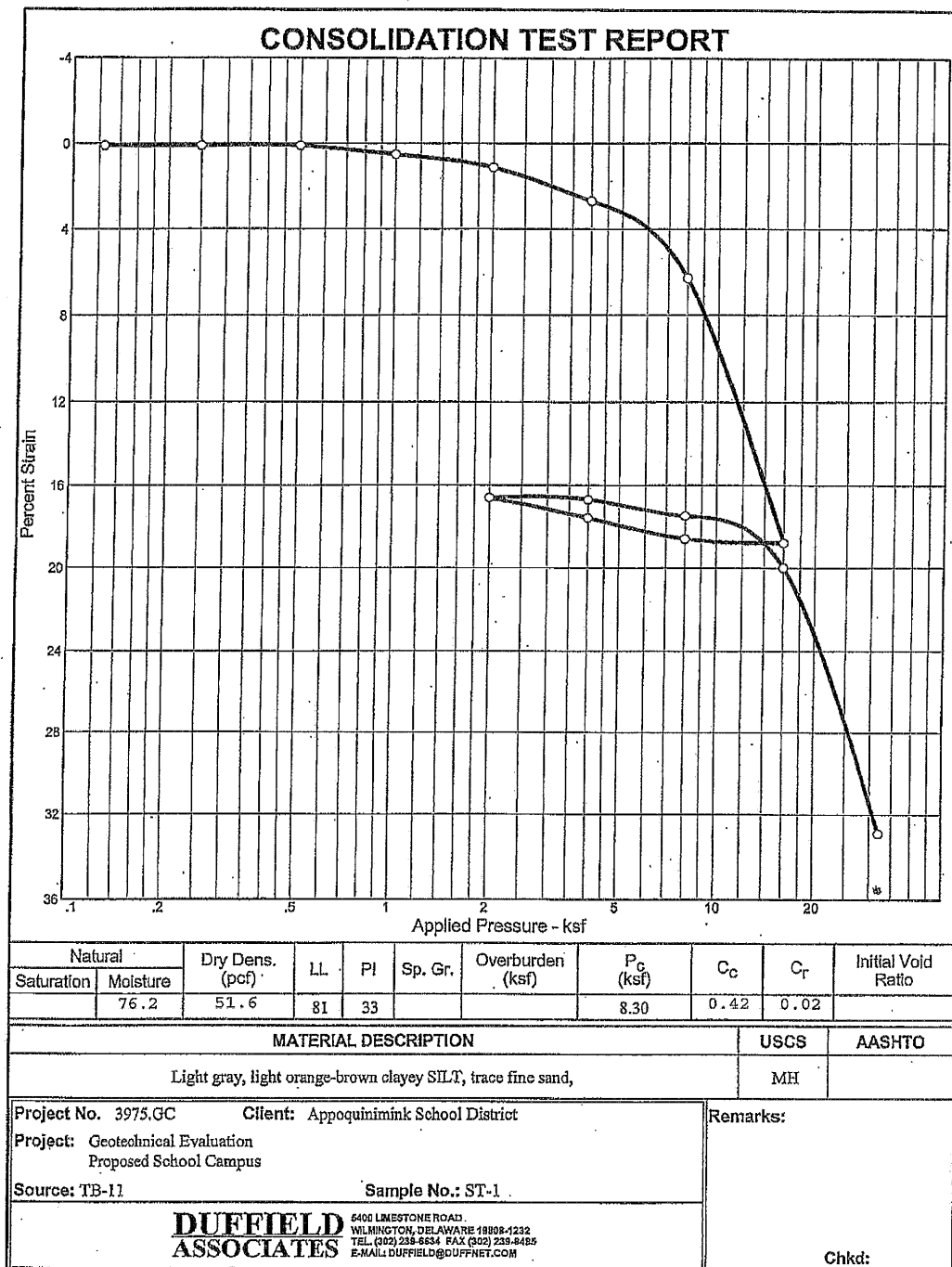
## **CONSOLIDATION TEST REPORTS (2)**

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# **APPENDIX F**

## **TOPSOIL TEST REPORTS (20)**

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**SOIL TEST REPORT**  
UNIVERSITY OF DELAWARE — SOIL TESTING LABORATORY  
NEWARK, DELAWARE 19717-1303



**BACKGROUND INFORMATION:**

Grower copy

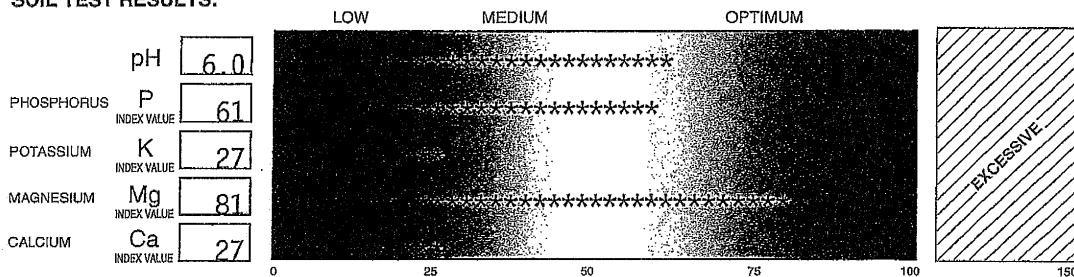
3975GCS1		NEW CASTLE	6/14/10	6/17/10	06/28/10	2473	538310
FIELD NAME OR NO.	ACRES	COUNTY	DATE SAMPLED	DATE RECEIVED	DATE COMPLETE	LAB NO.	BAG NO.

<b>SOIL TEST FOR: GROWER</b>	<b>ADDITIONAL COPY TO:</b>	<b>COUNTY AGENT</b>
DUFFIELD ASSOCIATES 5400 LIMESTONE ROAD WILMINGTON DE 19808	BRIAN DEVINE DUFFIELD ASSOCIATES 5400 LIMESTONE ROAD WILMINGTON DE 19808	GARDEN HELPLINE NEW CASTLE CO. EXT. 461 WYOMING RD. NEWARK, DE 19716-1303 302-831-2506

SOIL NAME	SOIL DRAINAGE	SOIL COLOR	SOIL TEXTURE	SAMPLE DEPTH	TILLAGE	PRESENT COVER	IRRIGATION	INJ. PUMP
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LAST CROP	YIELD OF LAST CROP	TYPE	T/A WHEN MANURE	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	MOS. AGO	T/A	TYPE	OTHER NUTRIENTS
									UNKN	

**SOIL TEST RESULTS:**



0.9	18.3	1.9	27.0	1.0	0.09	7.91	22.0	3.1	76.6	1,8,9
B	Mn	Zn	SO <sub>4</sub> S	% ORGANIC MATTER	SOIL SALTS MMHOS/CM	BUFFER pH	% Phosphorus Saturation	CEC meq/100gm	% Base Saturation	ENCLOSURES

**SUGGESTED FERTILIZER PROGRAM:**

**CROP:** INDUST. LAWN/ATHLETIC FIELD-ESTABLISHMENT  
**YIELD GOAL:** N/A

*****SEE BELOW*****							
T/A	TYPE	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	S	B	
LIME		LBS/A	LBS/A	LBS/A	LBS/A	LBS/A	

1. Apply and work in by spading, plowing, or rototilling 25 pounds ground limestone per 1000 square feet.
2. Apply 3 lbs muriate of potash (0-0-60) per 1000 square feet and work in to the top 4 to 6 inches of the of the soil by spading, plowing or rototilling.  
Apply 1.5 lbs 32-3-10 or equivalent water soluble fertilizer per 1000 square feet to the soil surface and rake in just before seeding.
3. Three to four weeks after germination, apply 1 lb N per 1000 square feet. Next season, switch to an appropriate lawn maintenance program as outlined in Soil Test Note 9 (enclosed).

**SOIL TEST REPORT**  
UNIVERSITY OF DELAWARE — SOIL TESTING LABORATORY  
NEWARK, DELAWARE 19717-1303



**BACKGROUND INFORMATION:**

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3975GCS2		NEW CASTLE	6/14/10	6/17/10	06/28/10	2472	538309
FIELD NAME OR NO.	ACRES	COUNTY	DATE SAMPLED	DATE RECEIVED	DATE COMPLETE	LAB NO.	BAG NO.

**SOIL TEST FOR: GROWER**

**ADDITIONAL COPY TO:**

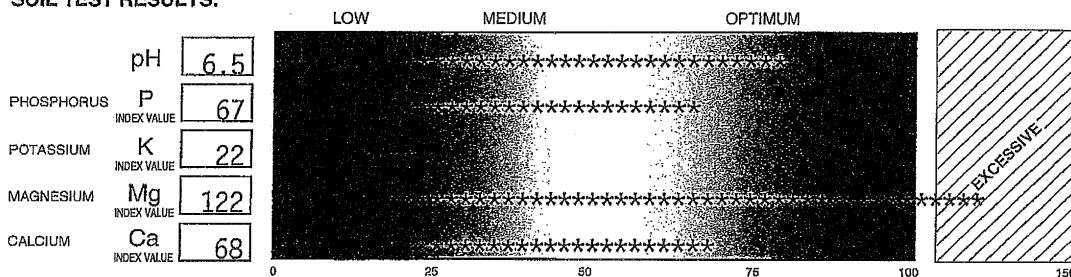
**COUNTY AGENT**

DUFFIELD ASSOCIATES 5400 LIMESTONE ROAD WILMINGTON DE 19808	BRIAN DEVINE DUFFIELD ASSOCIATES 5400 LIMESTONE ROAD WILMINGTON DE 19808	GARDEN HELPLINE NEW CASTLE CO. EXT. 461 WYOMING RD. NEWARK, DE 19716-1303 302-831-2506
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SOIL NAME	SOIL DRAINAGE	SOIL COLOR	SOIL TEXTURE	SAMPLE DEPTH	TILLAGE	PRESENT COVER	IRRIGATION	INJ. PUMP

						UNKN		
LAST CROP	YIELD OF LAST CROP	TYPE	T/A WHEN MANURE	N LAST FERTILIZER	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	MOS. AGO	T/A LAST LIME

**SOIL TEST RESULTS:**



1.2	60.5	3.9	22.0	1.4	0.10	7.94	26.0	5.3	91.0	1,8,9
B	Mn	Zn	SO <sub>4</sub> -S	% ORGANIC MATTER	SOL. SALTS MMHOS/CM	BUFFER pH	% Phosphorus Saturation	CEC meq/100gm	% Base Saturation	ENCLOSURES

**SUGGESTED FERTILIZER PROGRAM:**

**CROP:** INDUST. LAWN/ATHLETIC FIELD-ESTABLISHMENT  
**YIELD GOAL:** N/A

*****SEE BELOW*****					
T/A LIME	TYPE	N LBS/A	P <sub>2</sub> O <sub>5</sub> LBS/A	K <sub>2</sub> O LBS/A	S LBS/A

1. Apply 6.5 lbs muriate of potash (0-0-60) per 1000 square feet and work in to the top 4 to 6 inches of the soil by spading, plowing or rototilling.  
Apply 1.5 lbs 32-3-10 or equivalent water soluble fertilizer per 1000 square feet to the soil surface and rake in just before seeding.
2. Three to four weeks after germination, apply 1 lb N per 1000 square feet. Next season, switch to an appropriate lawn maintenance program as outlined in Soil Test Note 9 (enclosed).

**SOIL TEST REPORT**  
UNIVERSITY OF DELAWARE — SOIL TESTING LABORATORY  
NEWARK, DELAWARE 19717-1303



**BACKGROUND INFORMATION:**

Grower copy

3975GCS3		NEW CASTLE	6/14/10	6/17/10	06/28/10	2471	538308
FIELD NAME OR NO.	ACRES	COUNTY	DATE SAMPLED	DATE RECEIVED	DATE COMPLETE	LAB NO.	BAG NO.

**SOIL TEST FOR: GROWER**

**ADDITIONAL COPY TO:**

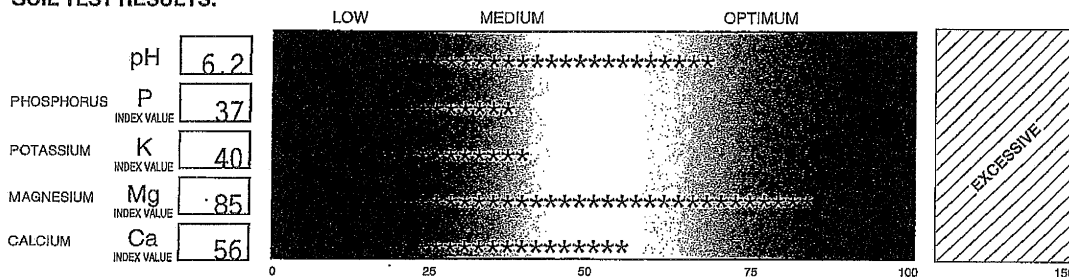
**COUNTY AGENT**

DUFFIELD ASSOCIATES 5400 LIMESTONE ROAD WILMINGTON DE 19808	BRIAN DEVINE DUFFIELD ASSOCIATES 5400 LIMESTONE ROAD WILMINGTON DE 19808	GARDEN HELPLINE NEW CASTLE CO. EXT. 461 WYOMING RD. NEWARK, DE 19716-1303 302-831-2506
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SOIL NAME	SOIL DRAINAGE	SOIL COLOR	SOIL TEXTURE	SAMPLE DEPTH	TILLAGE	PRESENT COVER	IRRIGATION	INJ. PUMP	

						UNKN			
LAST CROP	YIELD OF LAST CROP	TYPE	T/A WHEN MANURE	N LAST FERTILIZER	P <sub>2</sub> O <sub>5</sub> K <sub>2</sub> O	MOS. AGO LAST LIME	T/A	TYPE	OTHER NUTRIENTS

**SOIL TEST RESULTS:**



1.0	226.6	3.7	26.6	1.6	0.07	7.88	12.0	4.9	80.3	1,8,9
B	Mn	Zn	SO <sub>4</sub> -S	% ORGANIC MATTER	SOIL SALTS MMHOS/CM	BUFFER pH	% Phosphorus Saturation	CEC meq/100gm	% Base Saturation	ENCLOSURES

**SUGGESTED FERTILIZER PROGRAM:**

**CROP:** INDUST. LAWN/ATHLETIC FIELD-ESTABLISHMENT  
**YIELD GOAL:** N/A

*****SEE BELOW*****						
T/A-LIME	TYPE	N LBS/A	P <sub>2</sub> O <sub>5</sub> LBS/A	K <sub>2</sub> O LBS/A	S LBS/A	B LBS/A

1. Apply 2 lbs triple superphosphate (0-46-0) and 3 lbs muriate of potash (0-0-60) per 1000 square feet and work in to the top 4 to 6 inches of the soil by spading, plowing or rototilling.  
Apply 10 lbs 5-10-10 or equivalent water soluble fertilizer per 1000 square feet to the soil surface and rake in just before seeding.
2. Three to four weeks after germination, apply 1 lb N per 1000 square feet. Next season, switch to an appropriate lawn maintenance program as outlined in Soil Test Note 9 (enclosed).

**SOIL TEST REPORT**  
UNIVERSITY OF DELAWARE — SOIL TESTING LABORATORY  
NEWARK, DELAWARE 19717-1303



**BACKGROUND INFORMATION:**

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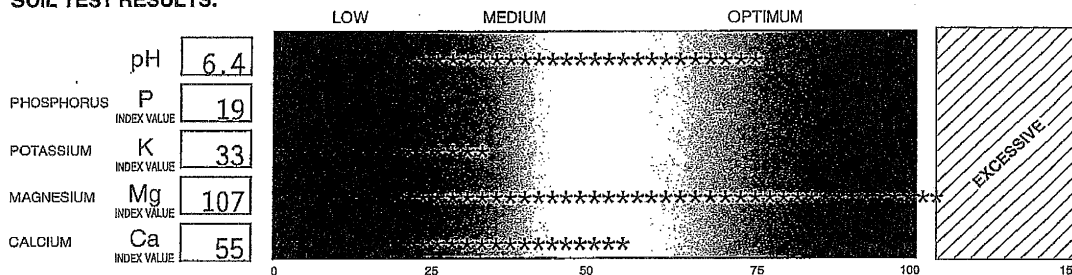
3975GCS4		NEW CASTLE	6/14/10	6/17/10	06/28/10	2470	538307
FIELD NAME OR NO.	ACRES	COUNTY	DATE SAMPLED	DATE RECEIVED	DATE COMPLETE	LAB NO.	BAG NO.

<b>SOIL TEST FOR: GROWER</b>	<b>ADDITIONAL COPY TO:</b>	<b>COUNTY AGENT</b>
DUFFIELD ASSOCIATES 5400 LIMESTONE ROAD WILMINGTON DE 19808	BRIAN DEVINE DUFFIELD ASSOCIATES 5400 LIMESTONE ROAD WILMINGTON DE 19808	GARDEN HELPLINE NEW CASTLE CO. EXT. 461 WYOMING RD. NEWARK, DE 19716-1303 302-831-2506

SOIL NAME	SOIL DRAINAGE	SOIL COLOR	SOIL TEXTURE	SAMPLE DEPTH	TILLAGE	PRESENT COVER	IRRIGATION	INJ. PUMP

						UNKN		
LAST CROP	YIELD OF LAST CROP	TYPE	T/A WHEN MANURE	N LAST FERTILIZER	P <sub>2</sub> O <sub>5</sub> K <sub>2</sub> O	MOS. AGO LAST LIME	T/A TYPE	OTHER NUTRIENTS

**SOIL TEST RESULTS:**



0.9	183.6	2.8	23.2	1.6	0.07	7.91	9.0	4.8	85.0	1,8,9
B	Mn	Zn	SO <sub>4</sub> -S	% ORGANIC MATTER	SOL. SALTS MMHOS/CM	BUFFER pH	% Phosphorus Saturation	CEC meq/100gm	% Base Saturation	ENCLOSURES

**SUGGESTED FERTILIZER PROGRAM:**

**CROP:** INDUST. LAWN/ATHLETIC FIELD-ESTABLISHMENT  
**YIELD GOAL:** N/A

*****SEE BELOW*****							
T/A	LIME	TYPE	N LBS/A	P <sub>2</sub> O <sub>5</sub> LBS/A	K <sub>2</sub> O LBS/A	S LBS/A	B LBS/A

1. Apply 4 lbs triple superphosphate (0-46-0) and 3 lbs muriate of potash (0-0-60) per 1000 square feet and work in to the top 4 to 6 inches of the soil by spading, plowing or rototilling.  
Apply 10 lbs 5-10-10 or equivalent water soluble fertilizer per 1000 square feet to the soil surface and rake in just before seeding.
2. Three to four weeks after germination, apply 1 lb N per 1000 square feet. Next season, switch to an appropriate lawn maintenance program as outlined in Soil Test Note 9 (enclosed).

**SOIL TEST REPORT**  
UNIVERSITY OF DELAWARE — SOIL TESTING LABORATORY  
NEWARK, DELAWARE 19717-1303



**BACKGROUND INFORMATION:**

Grower copy

3975GCS5		NEW CASTLE	6/14/10	6/17/10	06/28/10	2465	538302
FIELD NAME OR NO.	ACRES	COUNTY	DATE SAMPLED	DATE RECEIVED	DATE COMPLETE	LAB NO.	BAG NO.

**SOIL TEST FOR: GROWER**

**ADDITIONAL COPY TO:**

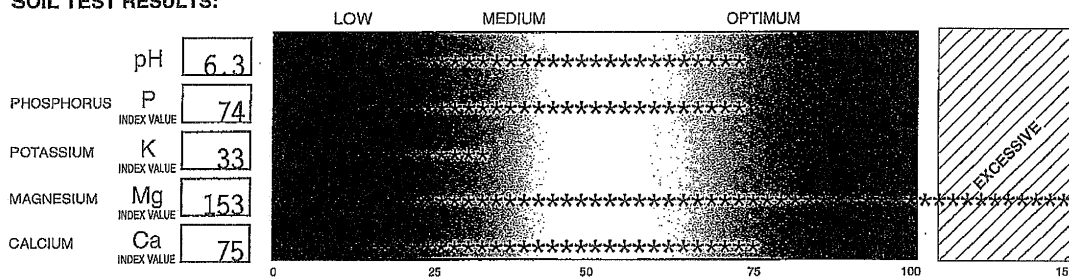
**COUNTY AGENT**

DUFFIELD ASSOCIATES 5400 LIMESTONE ROAD WILMINGTON DE 19808	BRIAN DEVINE DUFFIELD ASSOCIATES 5400 LIMESTONE ROAD WILMINGTON DE 19808	GARDEN HELPLINE NEW CASTLE CO. EXT. 461 WYOMING RD. NEWARK, DE 19716-1303 302-831-2506
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SOIL NAME	SOIL DRAINAGE	SOIL COLOR	SOIL TEXTURE	SAMPLE DEPTH	TILLAGE	PRESENT COVER	IRRIGATION	INJ. PUMP

						UNKN		
LAST CROP	YIELD OF LAST CROP	TYPE MANURE	T/A WHEN	N LAST FERTILIZER	P <sub>2</sub> O <sub>5</sub> K <sub>2</sub> O	MOS, AGO LAST TIME	T/A TYPE	OTHER NUTRIENTS

**SOIL TEST RESULTS:**



1.2	140.8	3.0	41.7	2.1	0.07	7.83	23.0	6.9	80.4	1,8,9
B	Mn	Zn	SO <sub>4</sub> -S	% ORGANIC MATTER	SOL. SALTS MMHOS/CM	BUFFER pH	% Phosphorus Saturation	CEO meq/100gm	% Base Saturation	ENCLOSURES

**SUGGESTED FERTILIZER PROGRAM:**

**CROP:** INDUST. LAWN/ATHLETIC FIELD-ESTABLISHMENT  
**YIELD GOAL:** N/A

*****SEE BELOW*****							
T/A	TYPE	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	S	B	
LIME		LBS/A	LBS/A	LBS/A	LBS/A	LBS/A	

1. Apply 3 lbs muriate of potash (0-0-60) per 1000 square feet and work in to the top 4 to 6 inches of the of the soil by spading, plowing or rototilling. Apply 1.5 lbs 32-3-10 or equivalent water soluble fertilizer per 1000 square feet to the soil surface and rake in just before seeding.
2. Three to four weeks after germination, apply 1 lb N per 1000 square feet. Next season, switch to an appropriate lawn maintenance program as outlined in Soil Test Note 9 (enclosed).

**SOIL TEST REPORT**  
UNIVERSITY OF DELAWARE — SOIL TESTING LABORATORY  
NEWARK, DELAWARE 19717-1303



**BACKGROUND INFORMATION:**

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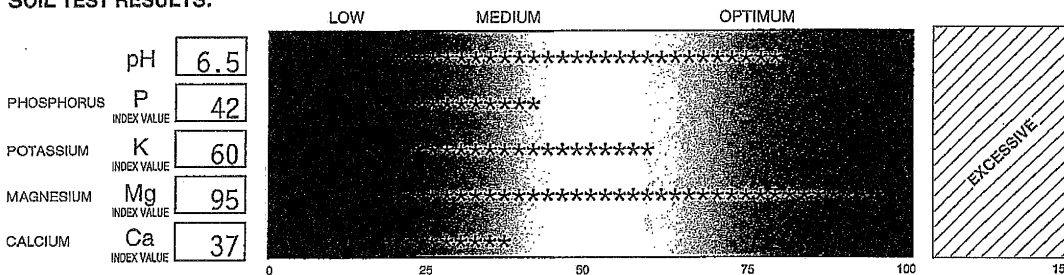
3975GCS6		NEW CASTLE	6/14/10	6/17/10	06/28/10	2466	538303
FIELD NAME OR NO.	ACRES	COUNTY	DATE SAMPLED	DATE RECEIVED	DATE COMPLETE	LAB NO.	BAG NO.

SOIL TEST FOR: GROWER	ADDITIONAL COPY TO:	COUNTY AGENT
DUFFIELD ASSOCIATES 5400 LIMESTONE ROAD WILMINGTON DE 19808	BRIAN DEVINE DUFFIELD ASSOCIATES 5400 LIMESTONE ROAD WILMINGTON DE 19808	GARDEN HELPLINE NEW CASTLE CO. EXT. 461 WYOMING RD. NEWARK, DE 19716-1303 302-831-2506

SOIL NAME	SOIL DRAINAGE	SOIL COLOR	SOIL TEXTURE	SAMPLE DEPTH	TILLAGE	PRESENT COVER	IRRIGATION	INJ. PUMP
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LAST CROP	YIELD OF LAST CROP	TYPE	T/A WHEN MANURE	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	MOS. AGO	T/A LAST LIME	TYPE	OTHER NUTRIENTS
							UNKN			

**SOIL TEST RESULTS:**



0.8	112.3	3.5	30.5	1.6	0.08	7.89	15.0	4.0	78.3	1,8,9
B	Mn	Zn	SO <sub>4</sub> -S	% ORGANIC MATTER	SOL. SALTS MMHOS/CM	BUFFER pH	% Phosphorus Saturation	CEC meq/100gm	% Base Saturation	ENCLOSURES

**SUGGESTED FERTILIZER PROGRAM:**

**CROP:** INDUST. LAWN/ATHLETIC FIELD-ESTABLISHMENT  
**YIELD GOAL:** N/A

*****	*****	*****	SEE BELOW	*****	*****	*****	*****
T/A	LIME	TYPE	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	S	B
			LBS/A	LBS/A	LBS/A	LBS/A	LBS/A

1. Apply 2 lbs triple superphosphate (0-46-0) per 1000 square feet and work in to the top 4 to 6 inches of the soil by spading, plowing or rototilling. Apply 10 lbs 5-10-10 or equivalent water soluble fertilizer per 1000 square feet to the soil surface and rake in just before seeding.
2. Three to four weeks after germination, apply 1 lb N per 1000 square feet. Next season, switch to an appropriate lawn maintenance program as outlined in Soil Test Note 9 (enclosed).



**SOIL TEST REPORT**  
UNIVERSITY OF DELAWARE — SOIL TESTING LABORATORY  
NEWARK, DELAWARE 19717-1303



**BACKGROUND INFORMATION:**

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3975GCS7		NEW CASTLE	6/14/10	6/17/10	06/28/10	2467	538304
FIELD NAME OR NO.	ACRES	COUNTY	DATE SAMPLED	DATE RECEIVED	DATE COMPLETE	LAB NO.	BAG NO.

**SOIL TEST FOR: GROWER**

**ADDITIONAL COPY TO:**

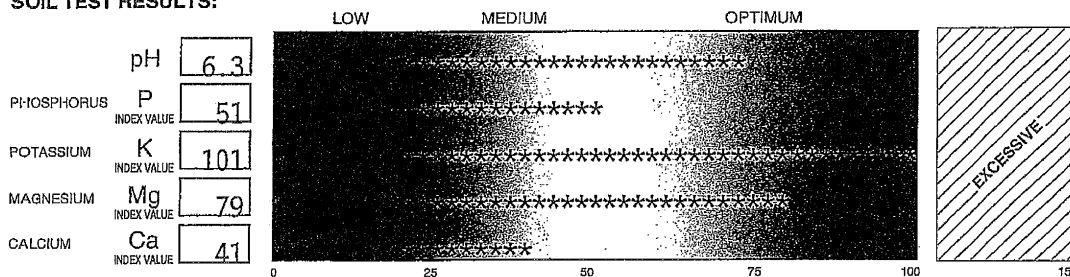
**COUNTY AGENT**

DUFFIELD ASSOCIATES 5400 LIMESTONE ROAD WILMINGTON DE 19808	BRIAN DEVINE DUFFIELD ASSOCIATES 5400 LIMESTONE ROAD WILMINGTON DE 19808	GARDEN HELPLINE NEW CASTLE CO. EXT. 461 WYOMING RD. NEWARK, DE 19716-1303 302-831-2506
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SOIL NAME	SOIL DRAINAGE	SOIL COLOR	SOIL TEXTURE	SAMPLE DEPTH	TILLAGE	PRESENT COVER	IRRIGATION	INJ. PUMP

						UNKN		
LAST CROP	YIELD OF LAST CROP	TYPE	T/A WHEN MANURE	N LAST FERTILIZER	P <sub>2</sub> O <sub>5</sub> K <sub>2</sub> O	MOS. AGO. LAST LIME	T/A TYPE	OTHER NUTRIENTS

**SOIL TEST RESULTS:**



0.9	117.5	3.9	26.6	1.7	0.08	7.87	15.0	4.4	76.5	1,8,9
B	Mn	Zn	SO <sub>4</sub> -S	% ORGANIC MATTER	SOIL SALTS MMHOS/CM	BUFFER pH	% Phosphorus Saturation	CEC meq/100gm	% Base Saturation	ENCLOSURES

**SUGGESTED FERTILIZER PROGRAM:**

**CROP:** INDUST. LAWN/ATHLETIC FIELD-ESTABLISHMENT  
**YIELD GOAL:** N/A

*****SEE BELOW*****						
T/A LIME	TYPE	N LBS/A	P <sub>2</sub> O <sub>5</sub> LBS/A	K <sub>2</sub> O LBS/A	S LBS/A	B LBS/A

1. Apply 0.5 lb of N per 1000 square feet of lawn area. This can be supplied by 1.5 lbs ammonium nitrate (34-0-0) or 1 lb of urea (46-0-0). If these two fertilizers are not available, select an alternate source that is low in P as soil levels of P and K are already in the "Optimum" or "Excessive" range.  
Apply fertilizer to the soil surface and rake in just before seeding.
2. Three to four weeks after germination, apply 1 lb N per 1000 square feet. Next season, switch to an appropriate lawn maintenance program as outlined in Soil Test Note 9 (enclosed).

**SOIL TEST REPORT**  
UNIVERSITY OF DELAWARE — SOIL TESTING LABORATORY  
NEWARK, DELAWARE 19717-1303



**BACKGROUND INFORMATION:**

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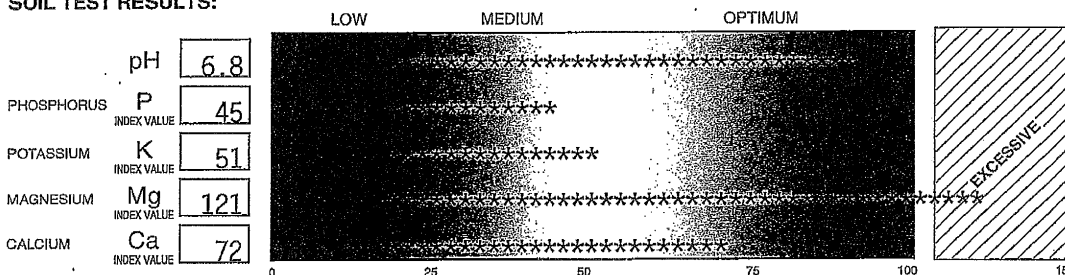
3975GCS8		NEW CASTLE	6/14/10	6/17/10	06/28/10	2468	538305
FIELD NAME OR NO.	ACRES	COUNTY	DATE SAMPLED	DATE RECEIVED	DATE COMPLETE	LAB NO.	BAG NO.

<b>SOIL TEST FOR: GROWER</b>	<b>ADDITIONAL COPY TO:</b>	<b>COUNTY AGENT</b>
DUFFIELD ASSOCIATES 5400 LIMESTONE ROAD WILMINGTON DE 19808	BRIAN DEVINE DUFFIELD ASSOCIATES 5400 LIMESTONE ROAD WILMINGTON DE 19808	GARDEN HELPLINE NEW CASTLE CO. EXT. 461 WYOMING RD. NEWARK, DE 19716-1303 302-831-2506

SOIL NAME	SOIL DRAINAGE	SOIL COLOR	SOIL TEXTURE	SAMPLE DEPTH	TILLAGE	PRESENT COVER	IRRIGATION	INJ. PUMP
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LAST CROP	YIELD OF LAST CROP	TYPE	T/A WHEN MANURE	N LAST FERTILIZER	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	MOS, ABO	T/A LAST LIME	TYPE	OTHER NUTRIENTS
							UNKN			

**SOIL TEST RESULTS:**



1.3	280.7	4.0	26.4	1.6	0.08	7.91	14.0	5.9	87.8	1,8,9
B	Mn	Zn	SO <sub>4</sub> -S	% ORGANIC MATTER	SOL. SALTS MMHOS/CM	BUFFER pH	% Phosphorus Saturation	CEO mgq/100gm	% Base Saturation	ENCLOSURES

**SUGGESTED FERTILIZER PROGRAM:**

**CROP:** INDUST. LAWN/ATHLETIC FIELD-ESTABLISHMENT  
**YIELD GOAL:** N/A

*****SEE BELOW*****						
T/A LIME	TYPE	N LBS/A	P <sub>2</sub> O <sub>5</sub> LBS/A	K <sub>2</sub> O LBS/A	S LBS/A	B LBS/A

1. Apply 2 lbs triple superphosphate (0-46-0) per 1000 square feet and work in to the top 4 to 6 inches of the soil by spading, plowing or rototilling.  
Apply 10 lbs 5-10-10 or equivalent water soluble fertilizer per 1000 square feet to the soil surface and rake in just before seeding.
2. Three to four weeks after germination, apply 1 lb N per 1000 square feet. Next season, switch to an appropriate lawn maintenance program as outlined in Soil Test Note 9 (enclosed).

**SOIL TEST REPORT**  
UNIVERSITY OF DELAWARE — SOIL TESTING LABORATORY  
NEWARK, DELAWARE 19717-1303



**BACKGROUND INFORMATION:**

Grower copy

3975GCS9		NEW CASTLE	6/14/10	6/17/10	06/28/10	2469	538306
FIELD NAME OR NO.	ACRES	COUNTY	DATE SAMPLED	DATE RECEIVED	DATE COMPLETE	LAB NO.	BAG NO.

**SOIL TEST FOR: GROWER**

**ADDITIONAL COPY TO:**

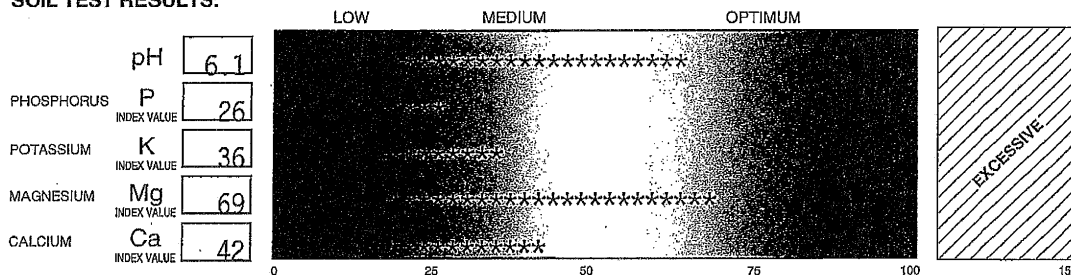
**COUNTY AGENT**

DUFFIELD ASSOCIATES 5400 LIMESTONE ROAD WILMINGTON DE 19808	BRIAN DEVINE DUFFIELD ASSOCIATES 5400 LIMESTONE ROAD WILMINGTON DE 19808	GARDEN HELPLINE NEW CASTLE CO. EXT. 461 WYOMING RD. NEWARK, DE 19716-1303 302-831-2506
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SOIL NAME	SOIL ORAINAGE	SOIL COLOR	SOIL TEXTURE	SAMPLE DEPTH	TILLAGE	PRESENT COVER	IRRIGATION	INJ. PUMP

						UNKN		
LAST CROP	YIELD OF LAST CROP	TYPE	T/A WHEN MANURE	N LAST FERTILIZER	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	MOS. AGO. T/A LAST LIME	OTHER NUTRIENTS

**SOIL TEST RESULTS:**



0.9	124.8	2.9	29.2	1.3	0.08	7.90	10.0	3.8	79.1	1,8,9
B	Mn	Zn	SO <sub>4</sub> -S	% ORGANIC MATTER	SOL. SALTS MMHOS/CM	BUFFER pH	% Phosphorus Saturation	CEC meq/100gm	% Base Saturation	ENCLOSURES

**SUGGESTED FERTILIZER PROGRAM:**

**CROP:** INDUST. LAWN/ATHLETIC FIELD-ESTABLISHMENT  
**YIELD GOAL:** N/A

*****SEE BELOW*****						
T/A LIME	TYPE	N LBS/A	P <sub>2</sub> O <sub>5</sub> LBS/A	K <sub>2</sub> O LBS/A	S LBS/A	B LBS/A

1. Apply 2 lbs triple superphosphate (0-46-0) and 3 lbs muriate of potash (0-0-60) per 1000 square feet and work in to the top 4 to 6 inches of the soil by spading, plowing or rototilling.  
Apply 10 lbs 5-10-10 or equivalent water soluble fertilizer per 1000 square feet to the soil surface and rake in just before seeding.
2. Three to four weeks after germination, apply 1 lb N per 1000 square feet. Next season, switch to an appropriate lawn maintenance program as outlined in Soil test Note 9 (enclosed).

**SOIL TEST REPORT**  
UNIVERSITY OF DELAWARE — SOIL TESTING LABORATORY  
NEWARK, DELAWARE 19717-1303



**BACKGROUND INFORMATION:**

Grower copy

3975GCS10		NEW CASTLE	6/14/10	6/17/10	06/28/10	2464	538301
FIELD NAME OR NO.	ACRES	COUNTY	DATE SAMPLED	DATE RECEIVED	DATE COMPLETE	LAB NO.	BAG NO.

**SOIL TEST FOR: GROWER**

**ADDITIONAL COPY TO:**

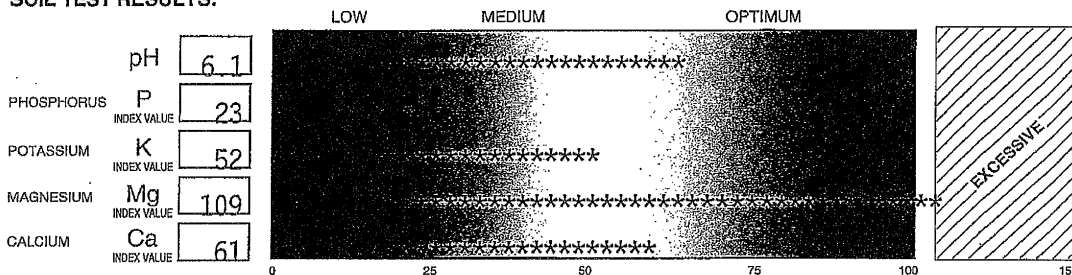
**COUNTY AGENT**

DUFFIELD ASSOCIATES 5400 LIMESTONE ROAD WILMINGTON DE 19808	BRIAN DEVINE DUFFIELD ASSOCIATES 5400 LIMESTONE ROAD WILMINGTON DE 19808	GARDEN HELPLINE NEW CASTLE CO. EXT. 461 WYOMING RD. NEWARK, DE 19716-1303 302-831-2506
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SOIL NAME	SOIL DRAINAGE	SOIL COLOR	SOIL TEXTURE	SAMPLE DEPTH	TILLAGE	PRESENT COVER	IRRIGATION	INL. PUMP

						UNKN		
LAST CROP	YIELD OF LAST CROP	TYPE	T/A WHEN MANURE	N	P <sub>2</sub> O <sub>5</sub> LAST FERTILIZER	K <sub>2</sub> O	MOS. AGO T/A LAST LIME	TYPE

**SOIL TEST RESULTS:**



1.1	145.6	3.4	37.9	2.2	0.09	7.81	8.0	6.0	74.7	1,8,9
B	Mn	Zn	SO <sub>4</sub> -S	% ORGANIC MATTER	SOL. SALTS MMHOS/CM	BUFFER pH	% Phosphorus Saturation	CEC meq/100gm	% Base Saturation	ENCLOSURES

**SUGGESTED FERTILIZER PROGRAM:**

**CROP:** INDUST. LAWN/ATHLETIC FIELD-ESTABLISHMENT  
**YIELD GOAL:** N/A

*****SEE BELOW*****						
T/A	LIME	TYPE	N LBS/A	P <sub>2</sub> O <sub>5</sub> LBS/A	K <sub>2</sub> O LBS/A	S LBS/A

1. Apply 4 lbs triple superphosphate (0-46-0) per 1000 square feet and work in to the top 4 to 6 inches of the soil by spading, plowing or rototilling. Apply 10 lbs 5-10-10 or equivalent water soluble fertilizer per 1000 square feet to the soil surface and rake in just before seeding.
2. Three to four weeks after germination, apply 1 lb N per 1000 square feet. Next season, switch to an appropriate lawn maintenance program as outlined in Soil test Note 9 (enclosed).

**SOIL TEST REPORT**  
UNIVERSITY OF DELAWARE — SOIL TESTING LABORATORY  
NEWARK, DELAWARE 19717-1303



**BACKGROUND INFORMATION:**

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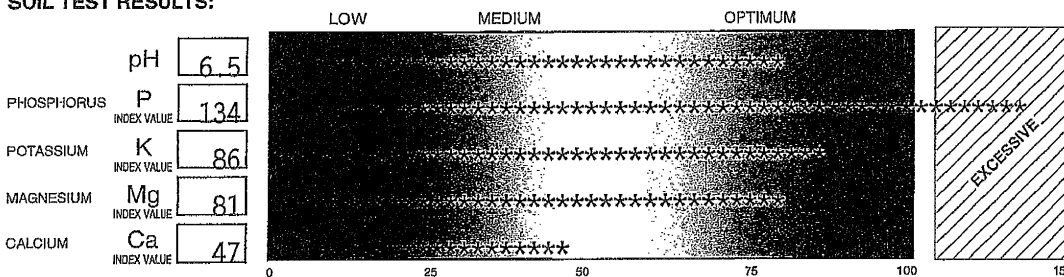
3975GCS11		NEW CASTLE	6/14/10	6/17/10	06/28/10	2463	538100
FIELD NAME OR NO.	ACRES	COUNTY	DATE SAMPLED	DATE RECEIVED	DATE COMPLETE	LAB NO.	BAG NO.

<b>SOIL TEST FOR: GROWER</b>	<b>ADDITIONAL COPY TO:</b>	<b>COUNTY AGENT</b>
DUFFIELD ASSOCIATES 5400 LIMESTONE ROAD WILMINGTON DE 19808	BRIAN DEVINE DUFFIELD ASSOCIATES 5400 LIMESTONE ROAD WILMINGTON DE 19808	GARDEN HELPLINE NEW CASTLE CO. EXT. 461 WYOMING RD. NEWARK, DE 19716-1303 302-831-2506

SOIL NAME	SOIL DRAINAGE	SOIL COLOR	SOIL TEXTURE	SAMPLE DEPTH	TILLAGE	PRESENT COVER	IRRIGATION	INJ. PUMP
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LAST CROP	YIELD OF LAST CROP	TYPE	T/A WHEN MANURE	N LAST FERTILIZER	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	MOS. AGO	T/A LAST TIME	TYPE	OTHER NUTRIENTS
									UNKN	

**SOIL TEST RESULTS:**



1.2	109.2	7.8	17.4	1.5	0.12	7.85	33.0	4.8	75.2	1,8,9
B	Mn	Zn	SO <sub>4</sub> S	% ORGANIC MATTER	SOL. SALTS MMHOS/CM	BUFFER pH	% Phosphorus Saturation	CEC meq/100gm	% Base Saturation	ENCLOSURES

**SUGGESTED FERTILIZER PROGRAM:**

**CROP:** INDUST. LAWN/ATHLETIC FIELD-ESTABLISHMENT  
**YIELD GOAL:** N/A

*****SEE BELOW*****						
T/A	TYPE	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	S	B
LIME		LBS/A	LBS/A	LBS/A	LBS/A	LBS/A

1. Apply 0.5 lb of N per 1000 square feet of lawn area. This can be supplied by 1.5 lbs ammonium nitrate (34-0-0) or 1 lb of urea (46-0-0). If these two fertilizers are not available, select an alternate source that is low in P as soil levels of P and K are already in the "Optimum" or "Excessive" range.  
Apply fertilizer to the soil surface and rake in just before seeding.
2. Three to four weeks after germination, apply 1 lb N per 1000 square feet. Next season, switch to an appropriate lawn maintenance program as outlined in Soil Test Note 9 (enclosed).

**SOIL TEST REPORT**  
UNIVERSITY OF DELAWARE — SOIL TESTING LABORATORY  
NEWARK, DELAWARE 19717-1303



**BACKGROUND INFORMATION:**

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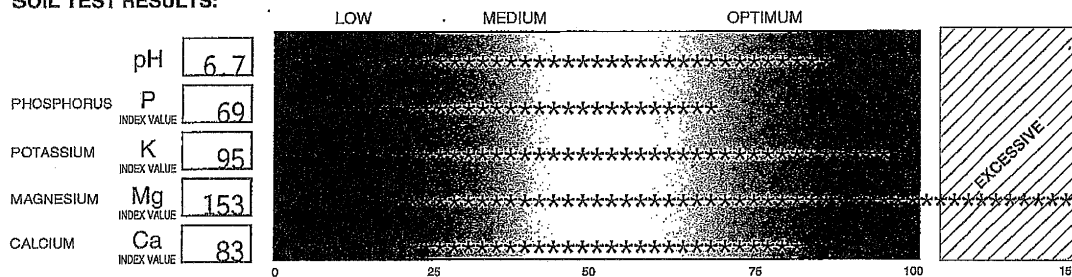
3975GCS12		NEW CASTLE	6/14/10	6/17/10	06/28/10	2462	538099
FIELD NAME OR NO.	ACRES	COUNTY	DATE SAMPLED	DATE RECEIVED	DATE COMPLETE	LAB NO.	BAG NO.

<b>SOIL TEST FOR: GROWER</b>	<b>ADDITIONAL COPY TO:</b>	<b>COUNTY AGENT</b>
DUFFIELD ASSOCIATES 5400 LIMESTONE RD. WILMINGTON DE 19808	BRIAN DEVINE DUFFIELD ASSOCIATES 5400 LIMESTONE RD. WILMINGTON DE 19808	GARDEN HELPLINE NEW CASTLE CO. EXT. 461 WYOMING RD. NEWARK, DE 19716-1303 302-831-2506

SOIL NAME	SOIL DRAINAGE	SOIL COLOR	SOIL TEXTURE	SAMPLE DEPTH	TILLAGE	PRESENT COVER	IRRIGATION	INJ. PUMP
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LAST CROP	YIELD OF LAST CROP	TYPE	T/A WHEN MANURE	N LAST FERTILIZER	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	MOS. AGO	T/A LAST LIME	TYPE	OTHER NUTRIENTS
									UNKN	

**SOIL TEST RESULTS:**



1.3	232.5	6.1	22.6	2.4	0.11	7.82	18.0	7.7	81.3	1,8,9
B	Mn	Zn	SO <sub>4</sub> -S	% ORGANIC MATTER	SOL. SALTS MMHOS/CM	BUFFER pH	% Phosphorus Saturation	CEC meq/100gm	% Base Saturation	ENCLOSURES

**SUGGESTED FERTILIZER PROGRAM:**

**CROP:** INDUST. LAWN/ATHLETIC FIELD-ESTABLISHMENT  
**YIELD GOAL:** N/A

*****SEE BELOW*****							
T/A	LIME	TYPE	N LBS/A	P <sub>2</sub> O <sub>5</sub> LBS/A	K <sub>2</sub> O LBS/A	S LBS/A	B LBS/A

1. Apply 0.5 lb of N per 1000 square feet of lawn area. This can be supplied by 1.5 lbs ammonium nitrate (34-0-0) or 1 lb of urea (46-0-0). If these two fertilizers are not available, select an alternate source that is low in P as soil levels of P and K are already in the "Optimum" or "Excessive" range.  
Apply fertilizer to the soil surface and rake in just before seeding.
2. Three to four weeks after germination, apply 1 lb N per 1000 square feet. Next season, switch to an appropriate lawn maintenance program as outlined in Soil test Note 9 (enclosed).

# SOIL TEST REPORT

UNIVERSITY OF DELAWARE — SOIL TESTING LABORATORY  
NEWARK, DELAWARE 19717-1303



## BACKGROUND INFORMATION:

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3975GC513		NEW CASTLE	6/14/10	6/17/10	06/28/10	2459	538096
FIELD NAME OR NO.	ACRES	COUNTY	DATE SAMPLED	DATE RECEIVED	DATE COMPLETE	LAB NO.	BAG NO.

## SOIL TEST FOR: GROWER

## ADDITIONAL COPY TO:

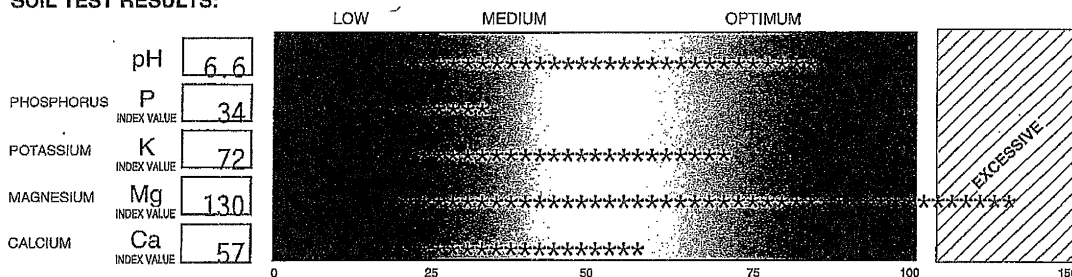
## COUNTY AGENT

DUFFIELD ASSOCIATES 5400 LIMESTONE RD. WILMINGTON DE 19808	BRIAN DEVINE DUFFIELD ASSOCIATES 5400 LIMESTONE RD. WILMINGTON DE 19808	GARDEN HELPLINE NEW CASTLE CO. EXT. 461 WYOMING RD. NEWARK, DE 19716-1303 302-831-2506
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SOIL NAME	SOIL DRAINAGE	SOIL COLOR	SOIL TEXTURE	SAMPLE DEPTH	TILLAGE	PRESENT COVER	IRRIGATION	INJ. PUMP
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LAST CROP	YIELD OF LAST CROP	TYPE	T/A WHEN MANURE	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	MOS. AGO	T/A	TYPE	OTHER NUTRIENTS
									UNKN	

## SOIL TEST RESULTS:



1.0	97.8	2.8	35.2	1.9	0.09	7.83	11.0	6.0	77.2	1.8.9
B	Mn	Zn	SO <sub>4</sub> S	% ORGANIC MATTER	SOL. SALTS MMHOS/CM	BUFFER pH	% Phosphorus Saturation	CEC meq/100gm	% Base Saturation	ENCLOSURES

## SUGGESTED FERTILIZER PROGRAM:

CROP: INDUST. LAWN/ATHLETIC  
FIELD-ESTABLISHMENT  
YIELD GOAL: N/A

*****SEE BELOW*****							
T/A	TYPE	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	S	B	
	LIME	LBS/A	LBS/A	LBS/A	LBS/A	LBS/A	

1. Apply 2 lbs triple superphosphate (0-46-0) per 1000 square feet and work in to the top 4 to 6 inches of the soil by spading, plowing or rototilling.  
Apply 10 lbs 5-10-10 or equivalent water soluble fertilizer per 1000 square feet to the soil surface and rake in just before seeding.
2. Three to four weeks after germination, apply 1 lb N per 1000 square feet. Next season, switch to an appropriate lawn maintenance program as outlined in Soil test Note 9 (enclosed).

**SOIL TEST REPORT**  
UNIVERSITY OF DELAWARE — SOIL TESTING LABORATORY  
NEWARK, DELAWARE 19717-1303



**BACKGROUND INFORMATION:**

Grower copy

3975GCS14		NEW CASTLE	6/14/10	6/17/10	06/28/10	2460	538097
FIELD NAME OR NO.	ACRES	COUNTY	DATE SAMPLED	DATE RECEIVED	DATE COMPLETE	LAB NO.	BAG NO.

**SOIL TEST FOR: GROWER**

**ADDITIONAL COPY TO:**

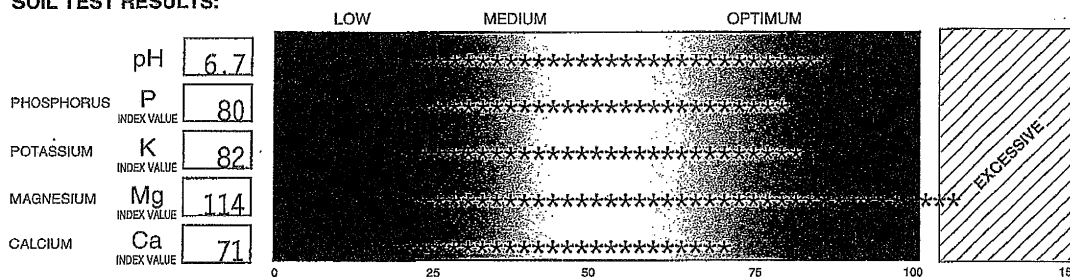
**COUNTY AGENT**

DUFFIELD ASSOCIATES 5400 LIMESTONE RD. WILMINGTON DE 19808	BRIAN DEVINE DUFFIELD ASSOCIATES 5400 LIMESTONE RD. WILMINGTON DE 19808	GARDEN HELPLINE NEW CASTLE CO. EXT. 461 WYOMING RD. NEWARK, DE 19716-1303 302-831-2506
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SOIL NAME	SOIL DRAINAGE	SOIL COLOR	SOIL TEXTURE	SAMPLE DEPTH	TILLAGE	PRESENT COVER	IRRIGATION	INJ. PUMP

						UNKN		
LAST CROP	YIELD OF LAST CROP	TYPE	T/A WHEN MANURE	N LAST FERTILIZER	P <sub>2</sub> O <sub>5</sub> K <sub>2</sub> O	MOS. AGO LAST LIME	T/A TYPE	OTHER NUTRIENTS

**SOIL TEST RESULTS:**



1.1	122.2	5.5	25.4	2.1	0.08	7.82	21.0	6.6	78.2	1,8,9
B	Mn	Zn	SO <sub>4</sub> S	% ORGANIC MATTER	SOIL SALTS MMHOS/CM	BUFFER pH	% Phosphorus Saturation	CEC mag/100gm	% Base Saturation	ENCLOSURES

**SUGGESTED FERTILIZER PROGRAM:**

**CROP:** INDUST. LAWN/ATHLETIC FIELD-ESTABLISHMENT  
**YIELD GOAL:** N/A

*****SEE BELOW*****							
T/A LIME	TYPE	N LBS/A	P <sub>2</sub> O <sub>5</sub> LBS/A	K <sub>2</sub> O LBS/A	S LBS/A	B LBS/A	

1. Apply 0.5 lb of N per 1000 square feet of lawn area. This can be supplied by 1.5 lbs ammonium nitrate (34-0-0) or 1 lb of urea (46-0-0). If these two fertilizers are not available, select an alternate source that is low in P as soil levels of P and K are already in the "Optimum" or "Excessive" range.  
Apply fertilizer to the soil surface and rake in just before seeding.
2. Three to four weeks after germination, apply 1 lb N per 1000 square feet. Next season, switch to an appropriate lawn maintenance program as outlined in Soil test Note 9 (enclosed).



**SOIL TEST REPORT**  
UNIVERSITY OF DELAWARE — SOIL TESTING LABORATORY  
NEWARK, DELAWARE 19717-1303



**BACKGROUND INFORMATION:**

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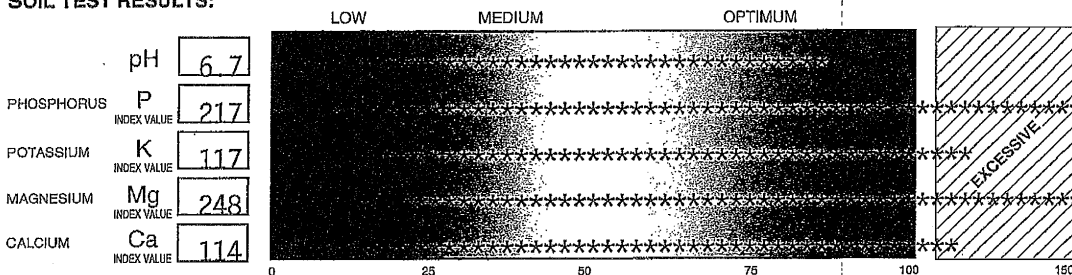
3975GCS15		NEW CASTLE	6/14/10	6/17/10	06/28/10	2461	538098
FIELD NAME OR NO.	ACRES	COUNTY	DATE SAMPLED	DATE RECEIVED	DATE COMPLETE	LAB NO.	BAG NO.

<b>SOIL TEST FOR: GROWER</b>		<b>ADDITIONAL COPY TO:</b>		<b>COUNTY AGENT</b>	
DUFFIELD ASSOCIATES 5400 LIMESTONE RD. WILMINGTON DE 19808		BRIAN DEVINE DUFFIELD ASSOCIATES 5400 LIMESTONE RD. WILMINGTON DE 19808		GARDEN HELPLINE NEW CASTLE CO. EXT. 461 WYOMING RD. NEWARK, DE 19716-1303 302-831-2506	

SOIL NAME	SOIL DRAINAGE	SOIL COLOR	SOIL TEXTURE	SAMPLE DEPTH	TILLAGE	PRESENT COVER	IRRIGATION	INL. PUMP
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LAST CROP	YIELD OF LAST CROP	TYPE	T/A WHEN MANURE	N LAST FERTILIZER	P <sub>2</sub> O <sub>5</sub> K <sub>2</sub> O	MOS. AGO LAST LIME	T/A TYPE	OTHER NUTRIENTS
						UNKN		

**SOIL TEST RESULTS:**



1.6	30.2	32.9	35.7	2.5	0.14	7.82	60.0	10.4	86.1	1,8,9
B	Mn	Zn	SO <sub>4</sub> S	% ORGANIC MATTER	SOIL SALTS MMHOS/CM	BUFFER pH	% Phosphorus Saturation	CEC meq/100gm	% Base Saturation	ENCLOSURES

**SUGGESTED FERTILIZER PROGRAM:**

**CROP:** INDUST. LAWN/ATHLETIC FIELD-ESTABLISHMENT  
**YIELD GOAL:** N/A

*****SEE BELOW*****							
T/A LIME	TYPE	N LBS/A	P <sub>2</sub> O <sub>5</sub> LBS/A	K <sub>2</sub> O LBS/A	S LBS/A	B LBS/A	

1. Apply 0.5 lb of N per 1000 square feet of lawn area. This can be supplied by 1.5 lbs ammonium nitrate (34-0-0) or 1 lb of urea (46-0-0). If these two fertilizers are not available, select an alternate source that is low in P as soil levels of P and K are already in the "Optimum" or "Excessive" range.  
Apply fertilizer to the soil surface and rake in just before seeding.
2. Three to four weeks after germination, apply 1 lb N per 1000 square feet. Next season, switch to an appropriate lawn maintenance program as outlined in Soil Test Note 9 (enclosed).

**SOIL TEST REPORT**  
UNIVERSITY OF DELAWARE — SOIL TESTING LABORATORY  
NEWARK, DELAWARE 19717-1303



**BACKGROUND INFORMATION:**

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3975GCS16		NEW CASTLE	6/14/10	6/17/10	06/28/10	2458	538095
FIELD NAME OR NO.	ACRES	COUNTY	DATE SAMPLED	DATE RECEIVED	DATE COMPLETE	LAB NO.	BAG NO.

**SOIL TEST FOR: GROWER**

**ADDITIONAL COPY TO:**

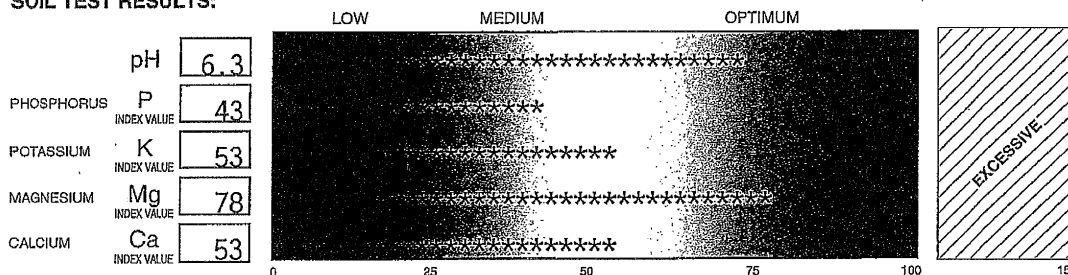
**COUNTY AGENT**

DUFFIELD ASSOCIATES 5400 LIMESTONE RD. WILMINGTON DE 19808	BRIAN DEVINE DUFFIELD ASSOCIATES 5400 LIMESTONE RD. WILMINGTON DE 19808	GARDEN HELPLINE NEW CASTLE CO. EXT. 461 WYOMING RD. NEWARK, DE 19716-1303 302-831-2506
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SOIL NAME	SOIL DRAINAGE	SOIL COLOR	SOIL TEXTURE	SAMPLE DEPTH	TILLAGE	PRESENT COVER	IRRIGATION	INJ. PUMP

						UNKN		
LAST CROP	YIELD OF LAST CROP	TYPE	T/A WHEN MANURE	N LAST FERTILIZER	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	MOS. AGO LAST TIME	T/A TYPE

**SOIL TEST RESULTS:**



0.8	91.8	2.3	28.6	1.5	0.09	7.81	14.0	5.3	71.2	1,8,9
B	Mn	Zn	SO <sub>4</sub> -S	% ORGANIC MATTER	SOL. SALTS MMHOS/CM	BUFFER pH	% Phosphorus Saturation	CEC meq/100gm	% Base Saturation	ENCLOSURES

**SUGGESTED FERTILIZER PROGRAM:**

**CROP:** INDUST. LAWN/ATHLETIC FIELD-ESTABLISHMENT  
**YIELD GOAL:** N/A

*****SEE BELOW*****							
T/A LIME	TYPE	N LBS/A	P <sub>2</sub> O <sub>5</sub> LBS/A	K <sub>2</sub> O LBS/A	S LBS/A	B LBS/A	

1. Apply 2 lbs triple superphosphate (0-46-0) per 1000 square feet and work in to the top 4 to 6 inches of the soil by spading, plowing or rototilling.  
Apply 10 lbs 5-10-10 or equivalent water soluble fertilizer per 1000 square feet to the soil surface and rake in just before seeding.
2. Three to four weeks after germination, apply 1 lb N per 1000 square feet. Next season, switch to an appropriate lawn maintenance program as outlined in Soil Test Note 9 (enclosed).

# SOIL TEST REPORT

UNIVERSITY OF DELAWARE — SOIL TESTING LABORATORY  
NEWARK, DELAWARE 19717-1303



## BACKGROUND INFORMATION: Grower copy

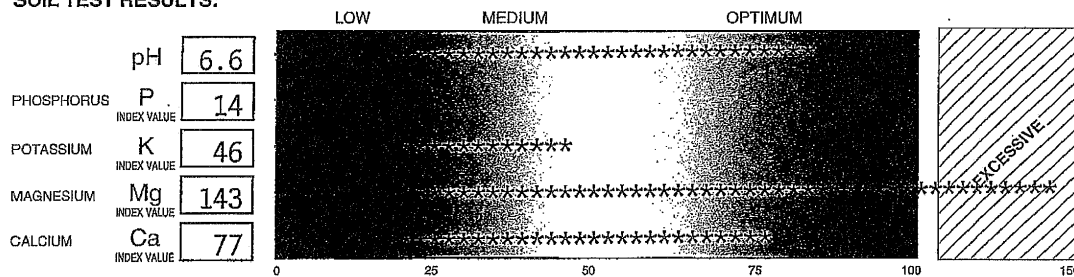
3975GCS17		NEW CASTLE	6/14/10	6/17/10	06/28/10	2457	538094
FIELD NAME OR NO.	ACRES	COUNTY	DATE SAMPLED	DATE RECEIVED	DATE COMPLETE	LAB NO.	BAG NO.

SOIL TEST FOR: GROWER	ADDITIONAL COPY TO:	COUNTY AGENT
DUFFIELD ASSOCIATES 5400 LIMESTONE RD. WILMINGTON DE 19808	BRIAN DEVINE DUFFIELD ASSOCIATES 5400 LIMESTONE RD. WILMINGTON DE 19808	GARDEN HELPLINE NEW CASTLE CO. EXT. 461 WYOMING RD. NEWARK, DE 19716-1303 302-831-2506

SOIL NAME	SOIL DRAINAGE	SOIL COLOR	SOIL TEXTURE	SAMPLE DEPTH	TILLAGE	PRESENT COVER	IRRIGATION	INJ. PUMP

						UNKN		
LAST CROP	YIELD OF LAST CROP	TYPE	T/A WHEN MANURE	N LAST FERTILIZER	P <sub>2</sub> O <sub>5</sub> K <sub>2</sub> O	MOS. AGO LAST LIME	T/A TYPE	OTHER NUTRIENTS

## SOIL TEST RESULTS:



1.1	77.9	1.5	33.1	1.8	0.11	7.81	7.0	7.1	78.7	1,8,9
B	Mn	Zn	SO <sub>4</sub> -S	% ORGANIC MATTER	SOL. SALTS MMHOS/CM	BUFFER pH	% Phosphorus Saturation	CEC meq/100gm	% Base Saturation	ENCLOSURES

## SUGGESTED FERTILIZER PROGRAM:

CROP: INDUST. LAWN/ATHLETIC  
FIELD-ESTABLISHMENT  
YIELD GOAL: N/A

*****SEE BELOW*****					
T/A LIME	TYPE	N LBS/A	P <sub>2</sub> O <sub>5</sub> LBS/A	K <sub>2</sub> O LBS/A	S LBS/A

- Apply 4 lbs triple superphosphate (0-46-0) and 3 lbs muriate of potash (0-0-60) per 1000 square feet and work in to the top 4 to 6 inches of the soil by spading, plowing or rototilling.  
Apply 10 lbs 5-10-10 or equivalent water soluble fertilizer per 1000 square feet to the soil surface and rake in just before seeding.
- Three to four weeks after germination, apply 1 lb N per 1000 square feet. Next season, switch to an appropriate lawn maintenance program as outlined in Soil Test Note 9 (enclosed).

# SOIL TEST REPORT

UNIVERSITY OF DELAWARE — SOIL TESTING LABORATORY  
NEWARK, DELAWARE 19717-1303



## BACKGROUND INFORMATION:

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3975GCS18		NEW CASTLE	6/14/10	6/17/10	06/28/10	2456	538093
FIELD NAME OR NO.	ACRES	COUNTY	DATE SAMPLED	DATE RECEIVED	DATE COMPLETE	LAB NO.	BAG NO.

## SOIL TEST FOR: GROWER

## ADDITIONAL COPY TO:

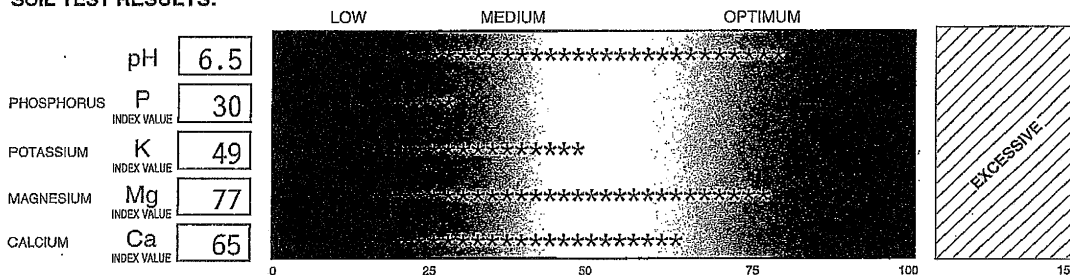
## COUNTY AGENT

DUFFIELD ASSOCIATES 5400 LIMESTONE RD. WILMINGTON DE 19808	BRIAN DEVINE DUFFIELD ASSOCIATES 5400 LIMESTONE RD. WILMINGTON DE 19808	GARDEN HELPLINE NEW CASTLE CO. EXT. 461 WYOMING RD. NEWARK, DE 19716-1303 302-831-2506
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SOIL NAME	SOIL DRAINAGE	SOIL COLOR	SOIL TEXTURE	SAMPLE DEPTH	TILLAGE	PRESENT COVER	IRRIGATION	INJ. PUMP

						UNKN		
LAST CROP	YIELD OF LAST CROP	TYPE	T/A WHEN MANURE	N LAST FERTILIZER	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	MOS. AGO LAST TIME	T/A TYPE

## SOIL TEST RESULTS:



1.2	148.8	4.8	56.1	2.1	0.14	7.80	13.0	5.9	73.0	1,8,9
B	Mn	Zn	SO <sub>4</sub> S	% ORGANIC MATTER	SOIL SALTS MMHOS/CM	BUFFER pH	% Phosphorus Saturation	CEC meq/100gm	% Base Saturation	ENCLOSURES

## SUGGESTED FERTILIZER PROGRAM:

CROP: INDUST. LAWN/ATHLETIC FIELD-ESTABLISHMENT  
YIELD GOAL: N/A

*****SEE BELOW*****							
T/A	LIME	TYPE	N LBS/A	P <sub>2</sub> O <sub>5</sub> LBS/A	K <sub>2</sub> O LBS/A	S LBS/A	B LBS/A

1. Apply 2 lbs triple superphosphate (0-46-0) and 3 lbs muriate of potash (0-0-60) per 1000 square feet and work in to the top 4 to 6 inches of the soil by spading, plowing or rototilling.  
Apply 10 lbs 5-10-10 or equivalent water soluble fertilizer per 1000 square feet to the soil surface and rake in just before seeding.
2. Three to four weeks after germination, apply 1 lb N per 1000 square feet. Next season, switch to an appropriate lawn maintenance program as outlined in Soil Test Note 9 (enclosed).

**SOIL TEST REPORT**  
UNIVERSITY OF DELAWARE — SOIL TESTING LABORATORY  
NEWARK, DELAWARE 19717-1303



**BACKGROUND INFORMATION:**

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3975GCS19		NEW CASTLE	6/14/10	6/17/10	06/28/10	2474	538083
FIELD NAME OR NO.	ACRES	COUNTY	DATE SAMPLED	DATE RECEIVED	DATE COMPLETE	LAB NO.	BAG NO.

**SOIL TEST FOR: GROWER**

**ADDITIONAL COPY TO:**

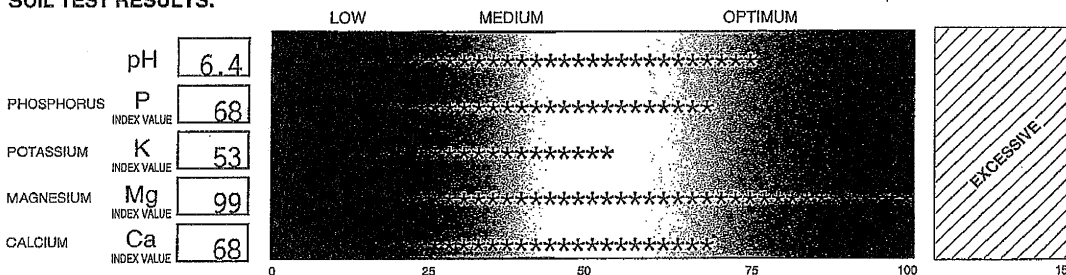
**COUNTY AGENT**

DUFFIELD ASSOCIATES 5400 LIMESTONE ROAD WILMINGTON DE 19808	BRIAN DEVINE DUFFIELD ASSOCIATES 5400 LIMESTONE ROAD WILMINGTON DE 19808	GARDEN HELPLINE NEW CASTLE CO. EXT. 461 WYOMING RD. NEWARK, DE 19716-1303 302-831-2506
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SOIL NAME	SOIL DRAINAGE	SOIL COLOR	SOIL TEXTURE	SAMPLE DEPTH	TILLAGE	PRESENT COVER	IRRIGATION	INJ. PUMP

						UNKN		
LAST CROP	YIELD OF LAST CROP	TYPE	T/A WHEN MANURE	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	MOS. AGO	T/A
				LAST FERTILIZER			LAST LIME	TYPE
								OTHER NUTRIENTS

**SOIL TEST RESULTS:**



1.2	136.3	2.8	27.4	2.1	0.07	7.88	18.0	5.7	83.1	1,8,9
B	Mn	Zn	SO <sub>4</sub> S	% ORGANIC MATTER	SOL. SALTS	MMHOS/CM	BUFFER pH	% Phosphorus Saturation	CEC	mg/100gm
LBS/ACRE										

**SUGGESTED FERTILIZER PROGRAM:**

**CROP:** INDUST. LAWN/ATHLETIC  
FIELD-ESTABLISHMENT  
**YIELD GOAL:** N/A

*****SEE BELOW*****							
T/A	LIME	TYPE	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	S	B
			LBS/A	LBS/A	LBS/A	LBS/A	LBS/A

1. Apply 0.5 lb of N per 1000 square feet of lawn area. This can be supplied by 1.5 lbs ammonium nitrate (34-0-0) or 1 lb of urea (46-0-0). If these two fertilizers are not available, select an alternate source that is low in P as soil levels of P and K are already in the "Optimum" or "Excessive" range.  
Apply fertilizer to the soil surface and rake in just before seeding.
2. Three to four weeks after germination, apply 1 lb N per 1000 square feet. Next season, switch to an appropriate lawn maintenance program as outlined in Soil Test Note 9 (enclosed).

# SOIL TEST REPORT

UNIVERSITY OF DELAWARE — SOIL TESTING LABORATORY  
NEWARK, DELAWARE 19717-1303



## BACKGROUND INFORMATION:

Grower copy

3975GCS20		NEW CASTLE	6/14/10	6/17/10	06/28/10	2475	538084
FIELD NAME OR NO.	ACRES	COUNTY	DATE SAMPLED	DATE RECEIVED	DATE COMPLETE	LAB NO.	BAG NO.

## SOIL TEST FOR: GROWER

## ADDITIONAL COPY TO:

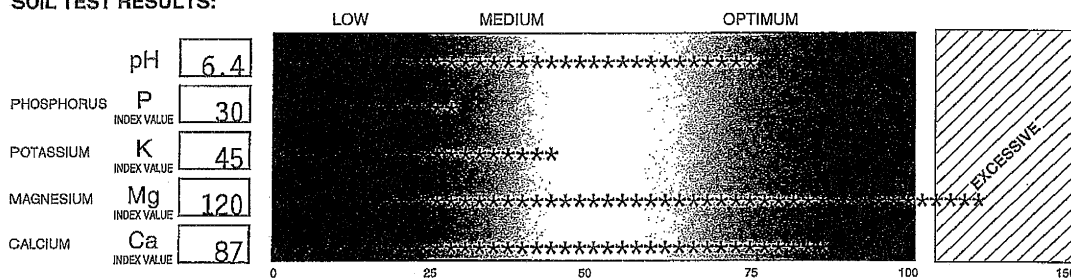
## COUNTY AGENT

DUFFIELD ASSOCIATES 5400 LIMESTONE ROAD WILMINGTON DE 19808	BRIAN DEVINE DUFFIELD ASSOCIATES 5400 LIMESTONE ROAD WILMINGTON DE 19808	GARDEN HELPLINE NEW CASTLE CO. EXT. 461 WYOMING RD. NEWARK, DE 19716-1303 302-831-2506
---	---	--

SOIL NAME	SOIL DRAINAGE	SOIL COLOR	SOIL TEXTURE	SAMPLE DEPTH	TILLAGE	PRESENT COVER	IRRIGATION	INJ. PUMP
-----------	---------------	------------	--------------	--------------	---------	---------------	------------	-----------

LAST CROP	YIELD OF LAST CROP	TYPE	T/A WHEN MANURE	N LAST FERTILIZER	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	MOS. AGO	T/A LAST LIME	TYPE	OTHER NUTRIENTS
							UNKN			

## SOIL TEST RESULTS:



1.1	194.5	2.0	26.4	2.3	0.10	7.84	11.0	7.1	82.1	1,8,9
B	Mn	Zn	SO <sub>4</sub> -S	% ORGANIC MATTER	SOL. SALTS MMHOS/CM	BUFFER pH	% Phosphorus Saturation	CEC meq/100gm	% Base Saturation	ENCLOSURES

## SUGGESTED FERTILIZER PROGRAM:

CROP: INDUST. LAWN/ATHLETIC  
FIELD-ESTABLISHMENT  
YIELD GOAL: N/A

*****SEE BELOW*****							
T/A	LIME	TYPE	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	S	B
			LBS/A	LBS/A	LBS/A	LBS/A	LBS/A

1. Apply 2 lbs triple superphosphate (0-46-0) and 3 lbs muriate of potash (0-0-60) per 1000 square feet and work in to the top 4 to 6 inches of the soil by spading, plowing or rototilling.  
Apply 10 lbs 5-10-10 or equivalent water soluble fertilizer per 1000 square feet to the soil surface and rake in just before seeding.
2. Three to four weeks after germination, apply 1 lb N per 1000 square feet. Next season, switch to an appropriate lawn maintenance program as outlined in Soil Test Note 9 (enclosed).

# **APPENDIX G**

## **GENERAL NOTES**



## GENERAL NOTES

DUFFIELD ASSOCIATES uses the following definitions and terminology to classify and correlate the field and laboratory samples.

**VISUAL UNIFIED CLASSIFICATIONS:** The soil samples are described by color, major constituent, modifiers (by percentage), and density (or consistency). Coarse Grained or Granular Soils have more than 50% of their dry weight retained on a No. 200 sieve; they are described as: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a No. 200 sieve; they are described as: clays or clayey silts if they are cohesive and silts if they are noncohesive. In addition to gradation, granular soils are defined on the basis of their relative in-place density and fine grained soils on the basis of their strength or consistency and their plasticity.

The Unified Soil Classification symbols are:

### COARSE GRAINED SOILS

GW - Well graded gravels  
GP - Poorly graded gravels  
GM - Silty gravels  
GC - Clayey gravels  
SW - Well graded sands  
SP - Poorly graded sands  
SM - Silty sands  
SC - Clayey sands

### FINE GRAINED SOILS

ML - Silts of low plasticity  
CL - Clays of low to medium plasticity  
OL - Organic silt clays of low plasticity  
MH - Silts of high plasticity  
CH - Clays of high plasticity  
OH - Organic silt clays of high plasticity  
PT - Peat and highly organic soils

### SIZE DESCRIPTION

F - Fine  
M - Medium  
C - Coarse  
G - Gravel

### MODIFIERS (PERCENTAGE)

Tr - Trace 1 - 10%  
Ltl - Little 11 - 20%  
Some 21 - 35%  
& - And 36 - 50%

### COLOR

Or - Orange	Blk - Black	Vc - Varicolored
Yel - Yellow	Gr - Gray	Dk - Dark
Br - Brown	R - Red	Lt - Light

### DENSITY: COARSE GRAINED SOILS

Very loose 4 blows/ft or less  
Loose 5 to 10 blows/ft  
Medium 11 to 30 blows/ft  
Dense 31 to 50 blows/ft  
Very Dense 51 blows/ft or more

### CONSISTENCY: FINE GRAINED SOILS

Very soft 2 blows/ft or less  
Soft 3 to 4 blows/ft  
Medium 5 to 8 blows/ft  
Stiff 9 to 15 blows/ft  
Very stiff 16 to 30 blows/ft  
Hard 31 blows/ft or more

NOTE: The Standard Penetration Test "N" value is the number of blows per foot of a 140 pound hammer falling 30 inches on a 2 inch O.D. split spoon sampler, except where otherwise noted.





Duffield Associates, Inc.  
5400 Limestone Road  
Wilmington, DE 19808  
Phone: 302.239.6634  
Fax: 302.239.8485  
duffnet.com

January 5, 2017

***Via Electronic Mail***

Mr. Robert Hershey  
Appoquinimink School District  
118 S. Sixth Street  
P.O. Box 4010  
Odessa, DE 19730

RE: Project No. 3975.GM  
Surcharge Fill Material Summary  
Geotechnical Evaluation – Phase 2  
Proposed Appoquinimink School District Campus  
Odessa, Delaware

Dear Mr. Hershey:

In accordance with our agreement dated November 15, 2016, we have prepared this summary of our review of the existing surcharge fill material located in the area of the proposed high school and middle school to be constructed during the Phase 2 of the Appoquinimink School District campus located off of Old State Road in Odessa, Delaware.

As part of Duffield Associates, Inc.'s (Duffield's) geotechnical evaluation of the Phase 1 portion of the site development in June 2010, an approximate 10- to 20-foot thick layer of soft, compressible, high plasticity silt and clay soils was observed underlying much of the site. A portion of the Phase 1 development included a soil surcharging program, using on site soils, in the proposed new elementary school building area in an attempt to improve the soft compressible soil layer. Following the surcharge period, the soil surcharge was relocated to a portion of the Phase 2 proposed high school and middle school buildings and placed to thicknesses of 12 to 15 feet to allow for Phase 1 construction.

The stockpile was not placed as engineered fill and limited subgrade preparation or review was performed prior to moving the stockpile. In preparation for the required Phase 2 site work and building foundation construction, Duffield was requested to review the existing surcharge fill and provide our observations and comments concerning the future use of the surcharge material.

On December 13, 2016, ten (10) backhoe excavated test pits were performed through the surcharge material by a subcontractor to Duffield utilizing a rubber tired backhoe. The test pit locations were determined in the field by our representative based on offsets from existing site features. Test pit logs along with a location sketch are enclosed. Upon completion of the field program, the test pits were backfilled with excavated materials.

*Enhancing our community one project at a time for 40 years.*

Mr. Robert Hershey  
RE: Project No. 3975.GM  
January 5, 2017  
Page 2



Representative samples of the material encountered were returned to our soils testing laboratory for engineering index testing including moisture content determination and percent passing a No. 200 sieve (silt/clay fraction). The test results are included on the test pit logs.

#### Discussion

The depth of stockpile material was observed to range from 4.5 to 16 feet before the transition to apparent natural subgrade soils. The consistency of the material varied across the area of the stockpile, ranging from silty clayey sand to sand and clay to predominately clay soils. There was no clear pattern to the material deposits. This is consistent with soils which had been mined on site and hauled and placed on at least 2 occasions. This resulted in significant mixing of material. The in-place surcharge soils were generally observed to have a loose to medium density (or soft to stiff consistency). The in-situ moisture content of the soils ranged from 11% to 20%. The laboratory testing of the soils during the previous earthwork operations indicated that soil with moisture contents below 14% to 16% would be required for the soil to achieve compaction as structural fill.

As previously noted and based on the conditions observed in the test pits, the surcharge fill soils were not placed as engineered fill (e.g., placed in controlled lifts and compacted to a designated criteria). Therefore, the soils as placed should not be considered suitable for support of building foundations or slabs-on-grade and should be removed in their entirety from the proposed building and paved areas. The soils should be considered suitable for use as engineered fill material for building, paved and landscaped areas. To achieve the required compacted density, some moisture conditioning (drying) of these soils may be required. The more fine grained soils (silts and clays), are moisture sensitive soils and will require extended periods of dry (preferably warm) weather to properly condition these materials. These conditions are not likely during the winter and early spring construction season.

Separating the coarse grained (sand) material from the fine grained (silts and clays) soils may not be practical. Further mixing or blending of the surcharge soils, once they are removed from the building areas, should be considered. This could facilitate placement and compaction of these soils as engineered fill and assist in the moisture control of the material.

The enclosed has been prepared in accordance with generally accepted engineering practices and should be considered a supplement to the geotechnical evaluation report prepared by Duffield Associates, Inc. dated July 2010, and titled "Preliminary Geotechnical Evaluation, Appoquinimink School District, Proposed Odessa Campus-Phase 1, Odessa, Delaware," and should be reviewed in the context of the July 2010 report. A Phase 2 Geotechnical Evaluation Report will be provided under separate cover.

24 May 2017

Mr. Robert Hershey  
RE: Project No. 3975.GM  
January 5, 2017  
Page 3



We appreciate the opportunity to be of continued service to you. If you have any questions concerning the enclosed or require further information, please do not hesitate to contact us.

Very truly yours,


DUFFIELD ASSOCIATES, INC.

A handwritten signature in blue ink, appearing to read 'J. Cloonan', is written over a light blue horizontal line.

James F. Cloonan, P.E., LEED AP  
Senior Consultant

JFC/BJD:hmc  
3975GM.0117-AppoquiniminkPhase2Surcharge.Ltr.RPT

Enclosures: Location Sketch  
Test Pit Logs



**DUFFIELD ASSOCIATES**  
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 EMAIL: DUFFIELD@DUFFNET.COM

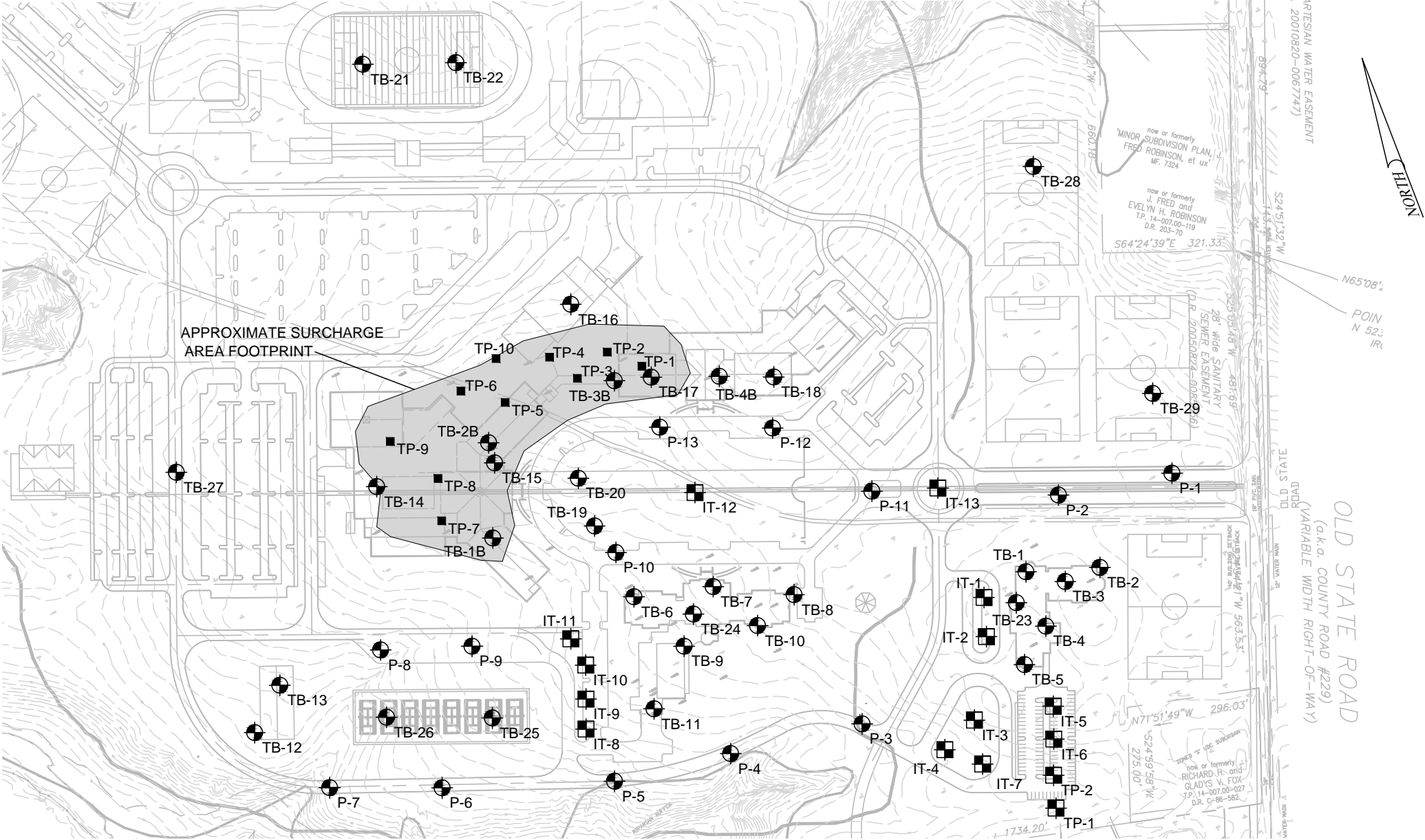
DESIGNED BY:	JFC
DRAWN BY:	ARS
CHECKED BY:	
FILE:	B-3975GM-01

TEST BORING, TEST PIT, AND INFILTRATION TEST LOCATION SKETCH





**APPOQUINIMINK SCHOOL DISTRICT  
PROPOSED ODESSA CAMPUS**

ODESSA-NEW CASTLE COUNTY-DELAWARE

DATE:	4 JANUARY 2017
SCALE:	1"= 250'
PROJECT NO.	3975.GM
SHEET:	FIGURE 1



- KEY:

  -  TB-1/P-1 - APPROXIMATE TEST BORING LOCATION
  -  IT-1 - APPROXIMATE INFILTRATION PIT LOCATION
  -  TB-1B - SUPPLEMENTAL EVALUATION TEST BORING LOCATION
  -  TP-1 - APPROXIMATE TEST PIT LOCATION

NOTE:

THIS SKETCH IS ADAPTED FROM A DRAWING TITLED "ACAD-ACAD-DUFFIELD-LAYOUT," PREPARED BY LANDMARK ENGINEERING AND DATED MAY 17, 2010.

REVISION 1. DATE: JANUARY 19, 2016

- REVISED TO INCLUDE SUPPLEMENTAL TEST BORING LOCATIONS TB-1B, TB-2B, TB-3B, AND TB-4B. (PROJECT NO. 3975.GL)

REVISION 2. DATE: DECEMBER 22, 2016

- REVISED TO INCLUDE TEST PIT EXCAVATIONS (PROJECT NO. 3975.GM)



**TEST PIT  
DESCRIPTIVE LOG**

PROJECT: Appoquinimink School District Campus Phase 2

PROJECT NO.: 3975.GM

CLIENT: Appoquinimink School District

DATE: December 13, 2016

LOGGED BY: ARS

WEATHER: Clear, 30s

---

<u>Test Pit No.</u>	<u>Depth Range (feet below existing ground surface)</u>	<u>Generalized Soil Description</u>
TP-1	0.0 – 4.5	FILL: Brown fine SAND, some silt, little medium to coarse sand, trace gravel (moist, loose to medium density)
	4.5 – ---	Orange-brown, gray CLAY, little fine sand, trace gravel (moist, medium consistency)

**NOTES:**

- (1) Test pit terminated at  $\pm$  9.0 feet below existing ground surface (b.e.g.s.).
- (2) No groundwater seepage observed during performance of test pit excavation.
- (3) No sidewall caving observed during excavation.
- (4) Borehole backfilled with excavated soils upon completion.
- (5) Test pit excavation performed by CGC Geoservices, LLC utilizing a rubber-tire backhoe.



### TEST PIT DESCRIPTIVE LOG

PROJECT: Appoquinimink School District Campus Phase 2

PROJECT NO.: 3975.GM

CLIENT: Appoquinimink School District

DATE: December 13, 2016

LOGGED BY: ARS

WEATHER: Clear, 30s

<u>Test Pit No.</u>	<u>Depth Range (feet below existing ground surface)</u>	<u>Generalized Soil Description</u>
TP-2	0.0 – 3.0	FILL: Orange-brown fine to medium SAND and SILT, trace gravel (moist, loose density)
	3.0 – 13.5 S-1 at 4 – 4.5 S-2 at 9 – 9.5	FILL: Gray SILT and fine to medium SAND, trace gravel, trace coarse sand, trace organics (moist, soft to medium consistency) <ul style="list-style-type: none"> <li>Moisture Content: 17.8%</li> <li>Percent Passing No. 200 Sieve: 59.9%</li> </ul>
	13.5 – 16.3 S-3 at 15 – 15.5	Orange-brown CLAY, some fine to medium sand, trace coarse sand (moist, medium to stiff consistency)
	16.3 – --- S-4 at 16.3 – 16.5	Dark gray SILT, some fine to medium sand, trace gravel, trace coarse sand, trace organics (moist, soft consistency) <ul style="list-style-type: none"> <li>Moisture Content: 26.2%</li> <li>Percent Passing No. 200 Sieve: 69.6%</li> </ul>

#### NOTES:

- (1) Test pit terminated at ± 16.5 feet below existing ground surface (b.e.g.s.).
- (2) No groundwater seepage observed during performance of test pit excavation.
- (3) No sidewall caving observed during excavation.
- (4) Borehole backfilled with excavated soils upon completion.
- (5) Test pit excavation performed by CGC Geoservices, LLC utilizing a rubber-tire backhoe.



**TEST PIT  
DESCRIPTIVE LOG**

PROJECT: Appoquinimink School District Campus Phase 2

PROJECT NO.: 3975.GM

CLIENT: Appoquinimink School District

DATE: December 13, 2016

LOGGED BY: ARS

WEATHER: Clear, 30s

---

<u>Test Pit No.</u>	<u>Depth Range (feet below existing ground surface)</u>	<u>Generalized Soil Description</u>
TP-3	0.0 – 10.0	FILL: Orange-brown, gray fine to medium SAND, little to some silt, trace gravel, trace coarse sand (moist to wet, loose to medium density)
	10.0 – ---	Orange, gray CLAY, little fine sand, trace medium to coarse sand (moist, medium consistency)

**NOTES:**

- (1) Test pit terminated at  $\pm$  13.0 feet below existing ground surface (b.e.g.s.).
- (2) No groundwater seepage observed during performance of test pit excavation.
- (3) No sidewall caving observed during excavation.
- (4) Borehole backfilled with excavated soils upon completion.
- (5) Test pit excavation performed by CGC Geoservices, LLC utilizing a rubber-tire backhoe.



### TEST PIT DESCRIPTIVE LOG

PROJECT: Appoquinimink School District Campus Phase 2

PROJECT NO.: 3975.GM

CLIENT: Appoquinimink School District

DATE: December 13, 2016

LOGGED BY: ARS

WEATHER: Clear, 30s

<u>Test Pit No.</u>	<u>Depth Range (feet below existing ground surface)</u>	<u>Generalized Soil Description</u>
TP-4	0.0 – 1.3	FILL: Orange-brown fine to medium SAND, some silt, little gravel, trace coarse sand (moist to wet, loose)
	1.3 – 4.5	FILL: Brown, orange-brown, gray-brown CLAY, little fine to coarse sand, little debris (asphalt fragments) (moist to wet, soft consistency)
	4.5 – 8.0 S-1 at 5.5 to 6	FILL: Brown fine to medium SAND, little gravel, little silt (moist to wet, loose to medium dense)
	8.0 – 13.0 S-2 at 10 – 10.5	FILL: Brown, gray-brown CLAY and fine to medium SAND, little coarse sand, trace gravel (moist to wet, soft consistency) <ul style="list-style-type: none"> <li>Moisture Content: 18.9%</li> <li>Percent Passing No. 200 Sieve: 54.9%</li> </ul>
	13.0 – 15.8	Orange-brown, gray CLAY, little fine sand, trace medium to coarse sand, trace gravel (moist, medium to stiff consistency)
	15.8 – ---	Dark gray CLAY, trace fine sand, trace gravel (moist, soft consistency)

#### NOTES:

- (1) Test pit terminated at ± 16.0 feet below existing ground surface (b.e.g.s.).
- (2) No groundwater seepage observed during performance of test pit excavation.
- (3) No sidewall caving observed during excavation.
- (4) Borehole backfilled with excavated soils upon completion.
- (5) Test pit excavation performed by CGC Geoservices, LLC utilizing a rubber-tire backhoe.





### TEST PIT DESCRIPTIVE LOG

PROJECT: Appoquinimink School District Campus Phase 2

PROJECT NO.: 3975.GM

CLIENT: Appoquinimink School District

DATE: December 13, 2016

LOGGED BY: ARS

WEATHER: Clear, 30s

<u>Test Pit No.</u>	<u>Depth Range (feet below existing ground surface)</u>	<u>Generalized Soil Description</u>
TP-5	0.0 – 2.0	FILL: Gray fine to coarse SAND, some gravel, little silt (moist, medium dense)
	2.0 – 6.5 S-1 at 4 – 4.5	FILL: Orange-brown fine to medium SAND, some gravel, little silt, trace coarse sand (moist to wet, loose to medium dense) <ul style="list-style-type: none"> <li>Moisture Content: 11.4%</li> <li>Percent Passing No. 200 Sieve: 18.8%</li> </ul>
	6.5 – 8.0 S-2 at 7 – 7.5	FILL: Orange-brown, gray fine to medium SAND and CLAY, trace gravel, trace coarse sand (moist to wet, soft consistency) <ul style="list-style-type: none"> <li>Moisture Content: 19.9%</li> <li>Percent Passing No. 200 Sieve: 48.5%</li> </ul>
	8.0 – 15.5	FILL: Orange-brown, gray CLAY, trace to little fine to coarse sand (moist to wet, medium to stiff consistency)
	15.5 – ---	Orange fine to medium SAND, little silt, little gravel (moist, loose to medium dense)

#### NOTES:

- (1) Test pit terminated at ± 17.0 feet below existing ground surface (b.e.g.s.).
- (2) No groundwater seepage observed during performance of test pit excavation.
- (3) No sidewall caving observed during excavation.
- (4) Borehole backfilled with excavated soils upon completion.
- (5) Test pit excavation performed by CGC Geoservices, LLC utilizing a rubber-tire backhoe.



**TEST PIT  
DESCRIPTIVE LOG**

PROJECT: Appoquinimink School District Campus Phase 2

PROJECT NO.: 3975.GM

CLIENT: Appoquinimink School District

DATE: December 13, 2016

LOGGED BY: ARS

WEATHER: Clear, 30s

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<u>Test Pit No.</u>	<u>Depth Range (feet below existing ground surface)</u>	<u>Generalized Soil Description</u>
TP-6	0.0 – 12.0	FILL: Orange-brown CLAY, some fine to coarse sand, little gravel, trace cobbles (moist, soft to medium consistency)
	12.0 – 14.0	Orange, gray CLAY, little to trace fine sand (moist, medium to stiff consistency)
	14.0 – ---	Orange-brown, gray, purple CLAY, little fine to medium sand, trace gravel (moist, soft consistency)

NOTES:

- (1) Test pit terminated at  $\pm$  16.5 feet below existing ground surface (b.e.g.s.).
- (2) No groundwater seepage observed during performance of test pit excavation.
- (3) No sidewall caving observed during excavation.
- (4) Borehole backfilled with excavated soils upon completion.
- (5) Test pit excavation performed by CGC Geoservices, LLC utilizing a rubber-tire backhoe.



**TEST PIT  
DESCRIPTIVE LOG**

PROJECT: Appoquinimink School District Campus Phase 2

PROJECT NO.: 3975.GM

CLIENT: Appoquinimink School District

DATE: December 13, 2016

LOGGED BY: ARS

WEATHER: Clear, 30s

<u>Test Pit No.</u>	<u>Depth Range (feet below existing ground surface)</u>	<u>Generalized Soil Description</u>
TP-7	0.0 – 8.5	FILL: Orange-brown, gray-brown, yellow CLAY, little fine to medium sand, trace gravel (moist to wet, soft consistency)
	8.5 – 16.5	FILL: Brown fine to medium SAND, some to little silt, little gravel (moist, loose)
	16.5 – ---	Orange-brown, gray CLAY, little fine to medium sand (moist, medium consistency)

**NOTES:**

- (1) Test pit terminated at  $\pm$  17.0 feet below existing ground surface (b.e.g.s.).
- (2) No groundwater seepage observed during performance of test pit excavation.
- (3) No sidewall caving observed during excavation.
- (4) Borehole backfilled with excavated soils upon completion.
- (5) Test pit excavation performed by CGC Geoservices, LLC utilizing a rubber-tire backhoe.



**TEST PIT  
DESCRIPTIVE LOG**

PROJECT: Appoquinimink School District Campus Phase 2

PROJECT NO.: 3975.GM

CLIENT: Appoquinimink School District

DATE: December 13, 2016

LOGGED BY: ARS

WEATHER: Clear, 30s

<u>Test Pit No.</u>	<u>Depth Range (feet below existing ground surface)</u>	<u>Generalized Soil Description</u>
TP-8	0.0 – 2.0	FILL: Orange, brown, gray CLAY, some fine sand, little gravel, little medium to coarse sand (moist, soft consistency)
	2.0 – 12.0 S-1 at 4 – 4.5	FILL: Brown fine to coarse SAND, little silt, trace gravel (moist, loose to medium dense)
	12.0 – --- S-2 at 13.5 – 14	Orange-brown, gray, pink CLAY, little fine sand, trace gravel (moist, medium to stiff consistency)

**NOTES:**

- (1) Test pit terminated at  $\pm$  17.0 feet below existing ground surface (b.e.g.s.).
- (2) No groundwater seepage observed during performance of test pit excavation.
- (3) No sidewall caving observed during excavation.
- (4) Borehole backfilled with excavated soils upon completion.
- (5) Test pit excavation performed by CGC Geoservices, LLC utilizing a rubber-tire backhoe.



### TEST PIT DESCRIPTIVE LOG

PROJECT: Appoquinimink School District Campus Phase 2

PROJECT NO.: 3975.GM

CLIENT: Appoquinimink School District

DATE: December 13, 2016

LOGGED BY: ARS

WEATHER: Clear, 30s

<u>Test Pit No.</u>	<u>Depth Range (feet below existing ground surface)</u>	<u>Generalized Soil Description</u>
TP-9	0.0 – 5.0	FILL: Orange-brown CLAY and fine to medium SAND, little gravel, trace coarse sand (moist to wet, soft consistency)
	5.0 – 13.0	FILL: Orange-brown fine to medium SAND and CLAY, little gravel (moist to wet, loose to medium dense)
	13.0 – 15.0 S-1 at 14 – 14.5	Gray-brown fine SAND and SILT, little gravel, little coarse sand (moist, loose to medium dense) <ul style="list-style-type: none"> <li>• Moisture Content: 17.8%</li> <li>• Percent Passing No. 200 Sieve: 48.5%</li> </ul>
	15.0 – ---	Orange, gray CLAY, little fine sand (moist, stiff consistency)

#### NOTES:

- (1) Test pit terminated at ± 16.0 feet below existing ground surface (b.e.g.s.).
- (2) No groundwater seepage observed during performance of test pit excavation.
- (3) Slight sidewall caving observed from ± 13 to 14 feet during excavation.
- (4) Borehole backfilled with excavated soils upon completion.
- (5) Test pit excavation performed by CGC Geoservices, LLC utilizing a rubber-tire backhoe.



**TEST PIT  
DESCRIPTIVE LOG**

PROJECT: Appoquinimink School District Campus Phase 2

PROJECT NO.: 3975.GM

CLIENT: Appoquinimink School District

DATE: December 13, 2016

LOGGED BY: ARS

WEATHER: Clear, 30s

---

<u>Test Pit No.</u>	<u>Depth Range (feet below existing ground surface)</u>	<u>Generalized Soil Description</u>
TP-10	0.0 – 3.0	FILL: Brown fine to medium SAND, some silt, trace gravel (moist, loose)
	3.0 – 8.0	Orange-brown CLAY, little fine to medium sand, trace gravel (moist, medium to stiff consistency)
	8.0 – --- S-1 at 9 – 9.5	Gray SILT, trace fine to medium sand (moist, medium consistency) <ul style="list-style-type: none"><li>• Moisture Content: 57.7%</li><li>• Percent Passing No. 200 Sieve: 96.3%</li></ul>

NOTES:

- (1) Test pit terminated at  $\pm$  11.0 feet below existing ground surface (b.e.g.s.).
- (2) Slight groundwater seepage observed at  $\pm$  11.0 feet during performance of test pit excavation.
- (3) No sidewall caving observed during excavation.
- (4) Borehole backfilled with excavated soils upon completion.
- (5) Test pit excavation performed by CGC Geoservices, LLC utilizing a rubber-tire backhoe.

24 May 2017



**DUFFIELD**  
**ASSOCIATES**  
Soil, Water & the Environment

Duffield Associates, Inc.  
5400 Limestone Road  
Wilmington, DE 19808  
Phone: 302.239.6634  
Fax: 302.239.8485  
duffnet.com

January 25, 2017

***Via Electronic Mail***

Mr. Robert Hershey  
Appoquinimink School District  
118 S. Sixth Street  
P.O. Box 4010  
Odessa, DE 19730

RE: Project No. 3975.GM  
On-Site Fill Source Review  
Geotechnical Evaluation – Phase 2, Addendum 1  
Proposed Appoquinimink School District Campus  
Odessa, Delaware

Dear Mr. Hershey:

In accordance with our agreement dated January 9, 2017, we have prepared this summary of our review of the surficial subsurface soils located in the area of proposed athletic fields to the north of the proposed high school and middle school to be constructed during Phase 2 of the Appoquinimink School District campus located off of Old State Road in Odessa, Delaware.

Based on our January 6, 2017, meeting with the project team, including representatives from Appoquinimink School District, EDiS, Landmark Engineering, and Duffield Associates (Duffield), the project team had requested that Duffield review the quality of the surficial subsurface soils in the northwest side of the site. This is an area that had not been evaluated during our previous subsurface exploration programs. It is understood that this area is being considered as a possible source of soil borrow and stormwater infiltration. Subsequent to our meeting, Landmark Engineering provide us with a site topographic drawing, indicating the area to be evaluated and the approximate locations of eight (8) proposed test pits.

On January 20, 2017, a subcontractor to Duffield utilizing a rubber-tired backhoe performed eight (8) backhoe excavated test pits. The test pit locations were determined in the field by our representative based on offsets from a "base line" established in the field along the proposed Environmental Way by Landmark Engineering prior to our field program. The test pits were designated as TP-11 through TP-18, as a continuation the test pit designations provided for previous site geotechnical evaluation excavations.

Test pit logs along with a location sketch are enclosed. Upon completion of the field program, the test pits were backfilled with excavated materials.

Representative samples of the material encountered were returned to our soils testing laboratory for engineering index testing including moisture content determination and percent passing a No. 200 sieve (silt/clay fraction). The test results are included on the test pit logs.

*Enhancing our community one project at a time for 40 years.*

Mr. Robert Hershey  
RE: Project No. 3975.GM  
January 25, 2017  
Page 2



### Discussion

The test pits were excavated to depths of approximately 10 to 12 feet below existing grade. The materials encountered below a surficial topsoil layer generally consisted of medium stiff to stiff varied colored clay containing varying quantities of sand. A surficial layer of sand containing gravel and silt was encountered to a depth of approximately 1 to 5 at TP-12 and 1 to 3 feet at TP-18. However, a uniform sand stratum extending across the evaluation area was not encountered. In addition, sand soils were encountered in TP-14 and TP-17 at a depth of approximately 10 feet. Groundwater or water seepage conditions were not encountered during the test pit excavations.

The in-situ moisture content of the surficial sands (TP-12 and TP-18) ranged from 10% to 12%. The in-situ moisture content of the clay material ranged from 20 to 27%.

With exception of the localized pockets of sand, the fine grain component (silt/clay) and in-situ moisture content of the soils encountered during this evaluation was significantly greater than the material observed in the existing soil surcharge located in the area of the proposed high school and middle school, as summarized in our January 5, 2017 correspondence. Use of the fine-grained soils as structural fill would require considerable drying to achieve the required compacted density. The localized areas of surficial sand soil would be considered suitable structural fill; however, "mining" these localized areas may not be practical.

Due to the moisture content and predominately fine-grained consistency of the clay soils encountered in the test pits, it is our opinion that this area should not be considered suitable for stormwater management utilizing infiltration practices.

The enclosed has been prepared in accordance with generally accepted engineering practices and should be considered a supplement to the geotechnical evaluation report prepared by Duffield Associates, Inc. dated July 2010, and titled "Preliminary Geotechnical Evaluation, Appoquinimink School District, Proposed Odessa Campus-Phase 1, Odessa, Delaware," and should be reviewed in the context of the July 2010 report. A Phase 2 Geotechnical Evaluation Report will be provided under separate cover.

We appreciate the opportunity to be of continued service to you. If you have any questions concerning the enclosed or require further information, please do not hesitate to contact us.

Very truly yours,

DUFFIELD ASSOCIATES, INC.

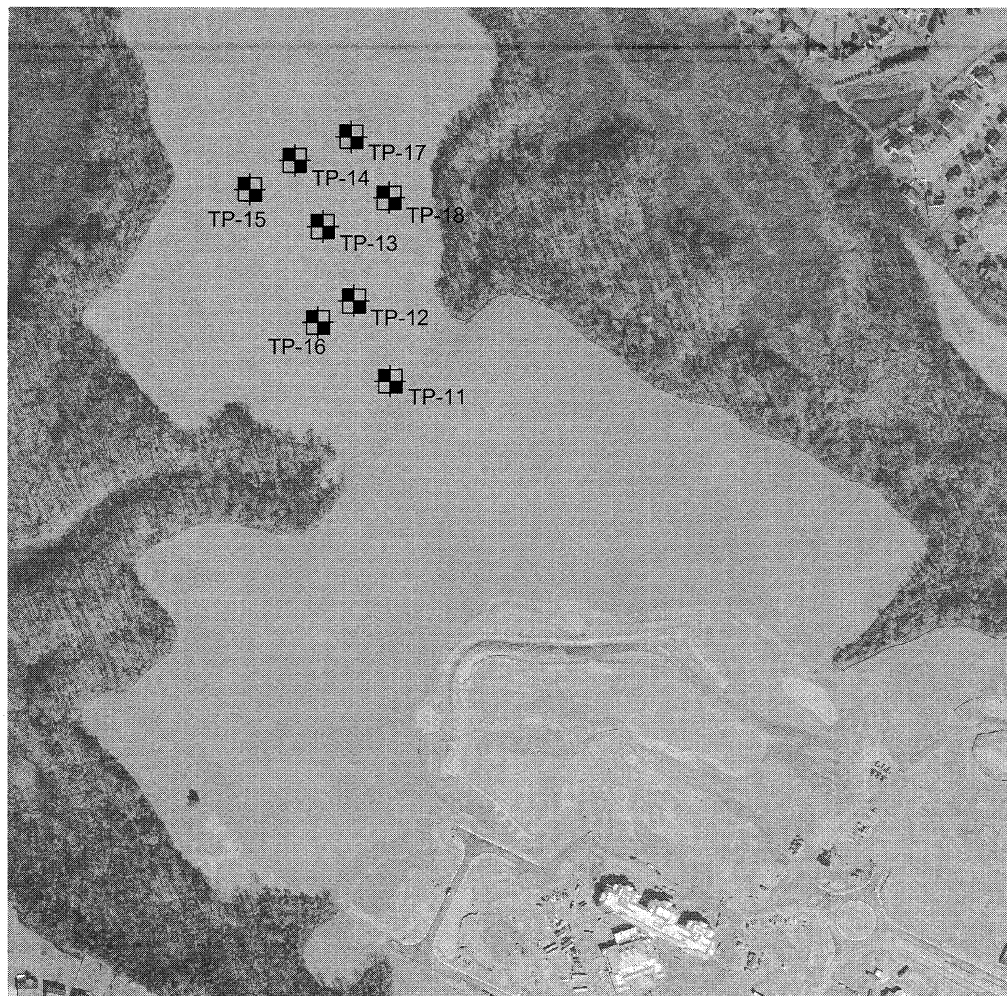
A handwritten signature in blue ink, appearing to read 'J. Cloonan', is written over the company name.

James F. Cloonan, P.E., LEED AP  
Senior Consultant

JFC:bac  
3975GM.0117-AppoquiniminkPhase2 On-Site Borrow.RPT

Enclosures: Location Sketch  
Test Pit Logs






**KEY:**

 TP-11 - APPROXIMATE LOCATION OF TEST PIT

**NOTE:**

THIS SKETCH IS ADAPTED FROM 2012 AERIAL DATA DISTRIBUTION MAPPING PROVIDED BY DEMAC.

DATE: 23 JANUARY 2017	<p>TEST PIT LOCATION SKETCH</p> <p><b>APPOQUINIMINK SCHOOL DISTRICT PHASE 2 CAMPUS</b></p> <p>ODESSA-NEW CASTLE COUNTY-DELAWARE</p>	DESIGNED BY: ARS	 <p><b>DUFFIELD ASSOCIATES</b> Soil, Water &amp; the Environment</p> <p>5400 LIMESTONE ROAD WILMINGTON, DE 19808-1232 TEL. 302.239.6634 FAX 302.239.8485</p> <p>OFFICES IN DELAWARE, MARYLAND PENNSYLVANIA AND NEW JERSEY</p> <p>E-MAIL: DUFFIELD@DUFFNET.COM</p>
SCALE: 1" = 500'		DRAWN BY: ARS	
PROJECT NO. 3975.GM		CHECKED BY: JFC	
SHEET: FIGURE 2		FILE: A-3975GM-02	



**TEST PIT  
DESCRIPTIVE LOG**

PROJECT: Appoquinimink School District Campus Phase 2

PROJECT NO.: 3975.GM

CLIENT: Appoquinimink School District

DATE: January 20, 2017

LOGGED BY: ARS

WEATHER: Overcast, 30s to 40s

---

<u>Test Pit No.</u>	<u>Depth Range (feet below existing ground surface)</u>	<u>Generalized Soil Description</u>
TP-11 Elev. ± 33.5 feet	0.0 – 0.8	TOPSOIL (± 10 inches)
	0.8 – 5.0	Orange-brown, gray CLAY, trace fine sand, trace gravel (moist, medium to stiff consistency)
	5.0 – ---	Gray, red CLAY, trace fine sand (moist, medium to stiff consistency)

**NOTES:**

- (1) Test pit terminated at ± 11.0 feet below existing ground surface (b.e.g.s.).
- (2) No groundwater seepage observed during performance of test pit excavation.
- (3) No sidewall caving observed during excavation.
- (4) Borehole backfilled with excavated soils upon completion.
- (5) Test pit excavation performed by CGC Geoservices, LLC utilizing a rubber-tire backhoe.



**TEST PIT  
DESCRIPTIVE LOG**

PROJECT: Appoquinimink School District Campus Phase 2

PROJECT NO.: 3975.GM

CLIENT: Appoquinimink School District

DATE: January 20, 2017

LOGGED BY: ARS

WEATHER: Overcast, 30s to 40s

<u>Test Pit No.</u>	<u>Depth Range (feet below existing ground surface)</u>	<u>Generalized Soil Description</u>
TP-12 Elev. ± 35 feet	0.0 – 0.9	TOPSOIL (± 11 inches)
	0.9 – 5.0 S-1 at 2.5 – 3.0	Orange-brown medium to coarse SAND, some gravel, some silt, trace fine sand (moist to wet, loose density) <ul style="list-style-type: none"><li>• Moisture Content: 12.3%</li><li>• Percent Passing No. 200 Sieve: 24.3%</li><li>• USCS Classification: SM</li></ul>
	5.0 – 7.0	Orange CLAY, trace fine sand (moist, stiff to very stiff consistency)
	7.0 – ---	Gray, orange, red CLAY, trace fine sand (moist, medium to stiff consistency)

**NOTES:**

- (1) Test pit terminated at ± 10.0 feet below existing ground surface (b.e.g.s.).
- (2) No groundwater seepage observed during performance of test pit excavation.
- (3) No sidewall caving observed during excavation.
- (4) Borehole backfilled with excavated soils upon completion.
- (5) Test pit excavation performed by CGC Geoservices, LLC utilizing a rubber-tire backhoe.



### TEST PIT DESCRIPTIVE LOG

PROJECT: Appoquinimink School District Campus Phase 2

PROJECT NO.: 3975.GM

CLIENT: Appoquinimink School District

DATE: January 20, 2017

LOGGED BY: ARS

WEATHER: Overcast, 30s to 40s

<u>Test Pit No.</u>	<u>Depth Range (feet below existing ground surface)</u>	<u>Generalized Soil Description</u>
TP-13 Elev. ± 31.5 feet	0.0 – 1.0	TOPSOIL (± 12 inches)
	1.0 – 2.3 S-1 at 1.5 – 2.0	Orange, orange-brown CLAY, some fine to medium sand, little coarse sand, trace gravel, trace cobbles (moist, loose to medium density) <ul style="list-style-type: none"> <li>Moisture Content: 20.0%</li> <li>Percent Passing No. 200 Sieve: 67.9%</li> <li>USCS Classification: CL</li> </ul>
	2.3 – 8.0	Orange CLAY, trace fine sand (moist, medium to stiff consistency)
	8.0 – --- S-2 at 8.5 – 9.0	Gray CLAY, trace fine sand (moist, medium to stiff consistency)

#### NOTES:

- (1) Test pit terminated at ± 10.0 feet below existing ground surface (b.e.g.s.).
- (2) No groundwater seepage observed during performance of test pit excavation.
- (3) No sidewall caving observed during excavation.
- (4) Borehole backfilled with excavated soils upon completion.
- (5) Test pit excavation performed by CGC Geoservices, LLC utilizing a rubber-tire backhoe.



### TEST PIT DESCRIPTIVE LOG

PROJECT: Appoquinimink School District Campus Phase 2

PROJECT NO.: 3975.GM

CLIENT: Appoquinimink School District

DATE: January 20, 2017

LOGGED BY: ARS

WEATHER: Overcast, 30s to 40s

<u>Test Pit No.</u>	<u>Depth Range (feet below existing ground surface)</u>	<u>Generalized Soil Description</u>
TP-14 Elev. ± 30.5 feet	0.0 – 1.0	TOPSOIL (± 12 inches)
	1.0 – 2.7 S-1 at 1.5 – 2.0	Orange-brown, gray-brown CLAY, little fine to medium sand, trace gravel (moist, loose density) <ul style="list-style-type: none"> <li>Moisture Content: 21.9%</li> <li>Percent Passing No. 200 Sieve: 82.6%</li> <li>USCS Classification: CL</li> </ul>
	2.7 – 7.0 S-2 at 3.5 – 4.5	Red, gray CLAY, trace fine to medium sand, trace gravel (moist, medium to stiff consistency) <ul style="list-style-type: none"> <li>Moisture Content: 27.1%</li> <li>Percent Passing No. 200 Sieve: 89.1%</li> <li>USCS Classification: CL</li> </ul>
	7.0 – 10.0	Orange, gray CLAY, trace fine sand (mottled) (moist, soft to medium consistency)
	10.0 – ---	Orange-brown, gray fine to medium SAND, some silt, trace gravel, trace coarse sand (moist, loose to medium density)

#### NOTES:

- (1) Test pit terminated at ± 11.0 feet below existing ground surface (b.e.g.s.).
- (2) No groundwater seepage observed during performance of test pit excavation.
- (3) No sidewall caving observed during excavation.
- (4) Borehole backfilled with excavated soils upon completion.
- (5) Test pit excavation performed by CGC Geoservices, LLC utilizing a rubber-tire backhoe.



**TEST PIT  
DESCRIPTIVE LOG**

PROJECT: Appoquinimink School District Campus Phase 2

PROJECT NO.: 3975.GM

CLIENT: Appoquinimink School District

DATE: January 20, 2017

LOGGED BY: ARS

WEATHER: Overcast, 30s to 40s

<u>Test Pit No.</u>	<u>Depth Range (feet below existing ground surface)</u>	<u>Generalized Soil Description</u>
TP-15 Elev. $\pm$ 32 feet	0.0 – 1.0	TOPSOIL ( $\pm$ 12 inches)
	1.0 – 4.5	Orange-brown CLAY, some fine to medium sand, trace gravel, trace cobbles (moist, soft to medium consistency)
	4.5 – 8.5 S-1 at 5.0 – 6.0	Red, gray CLAY, trace fine sand, trace cobbles (moist, medium to stiff consistency)
	8.5 – --- S-2 at 10.0 – 10.5	Gray, orange CLAY, little fine sand (mottled) (moist, medium consistency)

**NOTES:**

- (1) Test pit terminated at  $\pm$  11.0 feet below existing ground surface (b.e.g.s.).
- (2) No groundwater seepage observed during performance of test pit excavation.
- (3) No sidewall caving observed during excavation.
- (4) Borehole backfilled with excavated soils upon completion.
- (5) Test pit excavation performed by CGC Geoservices, LLC utilizing a rubber-tire backhoe.



**TEST PIT  
DESCRIPTIVE LOG**

PROJECT: Appoquinimink School District Campus Phase 2

PROJECT NO.: 3975.GM

CLIENT: Appoquinimink School District

DATE: January 20, 2017

LOGGED BY: ARS

WEATHER: Overcast, 30s to 40s

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<u>Test Pit No.</u>	<u>Depth Range (feet below existing ground surface)</u>	<u>Generalized Soil Description</u>
TP-16 Elev. ± 33 feet	0.0 – 0.8	TOPSOIL (± 9 inches)
	0.8 – 5.2	Orange, red-orange CLAY, trace fine sand (moist, medium to very stiff consistency)
	5.2 – ---	Gray, orange CLAY, trace fine sand (moist, medium to stiff consistency)

**NOTES:**

- (1) Test pit terminated at ± 11.5 feet below existing ground surface (b.e.g.s.).
- (2) No groundwater seepage observed during performance of test pit excavation.
- (3) No sidewall caving observed during excavation.
- (4) Borehole backfilled with excavated soils upon completion.
- (5) Test pit excavation performed by CGC Geoservices, LLC utilizing a rubber-tire backhoe.



### TEST PIT DESCRIPTIVE LOG

PROJECT: Appoquinimink School District Campus Phase 2

PROJECT NO.: 3975.GM

CLIENT: Appoquinimink School District

DATE: January 20, 2017

LOGGED BY: ARS

WEATHER: Overcast, 30s to 40s

Test Pit No.	Depth Range (feet below existing ground surface)	Generalized Soil Description
TP-17 Elev. ± 30 feet	0.0 – 1.0	TOPSOIL (± 12 inches)
	1.0 – 2.0 S-1 at 1.5 – 2.0	Orange, red-orange CLAY, some fine to medium sand, trace gravel, trace coarse sand (moist to wet, soft consistency) <ul style="list-style-type: none"> <li>Moisture Content: 22.8%</li> <li>Percent Passing No. 200 Sieve: 75.4%</li> <li>USCS Classification: CL</li> </ul>
	2.0 – 8.0	Red, gray CLAY, trace fine sand (moist, medium to stiff consistency)
	8.0 – 9.5	Gray, orange CLAY, trace fine sand (mottled) (moist, medium to stiff consistency)
	9.5 – --- S-2 at 10.0 – 10.5	Orange-brown, gray fine to medium SAND, some silt, trace coarse sand (moist to wet, loose to medium density) <ul style="list-style-type: none"> <li>Moisture Content: 21.6%</li> <li>Percent Passing No. 200 Sieve: 29.7%</li> <li>USCS Classification: SM</li> </ul>

#### NOTES:

- (1) Test pit terminated at ± 11.0 feet below existing ground surface (b.e.g.s.).
- (2) No groundwater seepage observed during performance of test pit excavation.
- (3) No sidewall caving observed during excavation.
- (4) Borehole backfilled with excavated soils upon completion.
- (5) Test pit excavation performed by CGC Geoservices, LLC utilizing a rubber-tire backhoe.





### TEST PIT DESCRIPTIVE LOG

PROJECT: Appoquinimink School District Campus Phase 2

PROJECT NO.: 3975.GM

CLIENT: Appoquinimink School District

DATE: January 20, 2017

LOGGED BY: ARS

WEATHER: Overcast, 30s to 40s

<u>Test Pit No.</u>	<u>Depth Range (feet below existing ground surface)</u>	<u>Generalized Soil Description</u>
TP-18 Elev. ± 30 feet	0.0 – 0.8	TOPSOIL (± 10 inches)
	0.8 – 3.0 S-1 at 1.5 – 2.0	Orange-brown medium to coarse SAND and GRAVEL, little silt, trace fine sand, trace cobbles (moist to wet, loose density) <ul style="list-style-type: none"> <li>Moisture Content: 10.6%</li> <li>Percent Passing No. 200 Sieve: 19.1%</li> <li>USCS Classification: SM</li> </ul>
	3.0 – 7.0	Orange, red CLAY, trace fine sand (moist, medium to stiff consistency)
	9.5 – ---	Gray, orange CLAY, trace fine sand (mottled) (moist, medium to stiff consistency)

#### NOTES:

- (1) Test pit terminated at ± 11.0 feet below existing ground surface (b.e.g.s.).
- (2) No groundwater seepage observed during performance of test pit excavation.
- (3) No sidewall caving observed during excavation.
- (4) Borehole backfilled with excavated soils upon completion.
- (5) Test pit excavation performed by CGC Geoservices, LLC utilizing a rubber-tire backhoe.

24 May 2017



Duffield Associates, Inc.  
5400 Limestone Road  
Wilmington, DE 19808  
Phone: 302.239.6634  
Fax: 302.239.8485  
duffnet.com

March 14, 2017

***Via Electronic Mail***

Mr. Robert Hershey  
Appoquinimink School District  
118 S. Sixth Street  
P.O. Box 4010  
Odessa, DE 19730

RE: Project No. 3975.GM  
Geotechnical Evaluation  
Phase 2 Fairview Campus Expansion  
Appoquinimink School District  
Odessa, Delaware

Dear Mr. Hershey:

Duffield Associates has completed our geotechnical evaluation for the proposed Appoquinimink School District Fairview Campus expansion located off Old State Road in Odessa, Delaware. Enclosed is our report summarizing the subsurface conditions observed at the site during recent and previous geotechnical evaluations performed in June 2010 and January 2016, and our recommendations for the design and construction of the proposed high school, gymnasium, performing arts building, and middle school foundations. These services were provided in general accordance with our agreement dated November 15, 2016.

We appreciate this opportunity to be of service to you, and look forward to continuing our work with you during the construction phase of this project. Should you have any questions concerning this evaluation, please do not hesitate to contact us.

Very truly yours,

DUFFIELD ASSOCIATES, INC.

Alison R. Schoch, P.E.  
Geotechnical Engineer


James F. Cloonan, P.E., LEED AP  
Senior Consultant

ARS/JFC/BJD:ak  
3975GM 0317-APPOQUINIMINK PHASE 2.RPT

Enclosure: Report

*Enhancing our community one project at a time for 40 years.*

Geotechnical Evaluation  
Phase 2 Fairview Campus Expansion  
Appoquinimink School District  
Odessa, Delaware  
March 14, 2017

 **DUFFIELD ASSOCIATES**  
Soil, Water & the Environment

*Civil*







*Water/Natural Resources*

*Geotechnical*

*Environmental*

*Construction Review*

*Coastal/Waterfront*





Appoquinimink School District  
Phase 2 Fairview Campus Expansion  
March 14, 2017  
RE: Project No. 3975.GM

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Appoquinimink School District  
Phase 2 Fairview Campus Expansion  
March 14, 2017  
RE: Project No. 3975.GM

## EXECUTIVE SUMMARY

The following report summarizes Duffield Associates, Inc.'s Geotechnical Evaluation for the proposed Phase 2 expansion at the Appoquinimink School District Fairview Campus located off Old State Road in Odessa, Delaware. The analysis and conclusions presented herein relate to the construction of the proposed high school, gymnasium, performing arts building, and middle school structures. This analysis was based primarily on field and laboratory observations and testing performed during Duffield Associates' previous evaluations at the site performed in June 2010 and January 2016. This evaluation is considered a supplement to the evaluations performed in 2010 and 2016, and the comments and recommendation of these earlier evaluations should be considered in the context of this report.

Beneath surface layers of topsoil and the existing temporary "soil stockpile", the observed subsurface conditions can generally be described as surficial interlayered medium to stiff consistency silt and clay and loose to medium dense sand, underlain by soft to medium consistency highly-plastic silt and clay. The high-plasticity silt/clay stratum was observed to be underlain by medium to dense sands in the Phase 2 campus area.

The layer of highly compressible and highly plastic silt/clay soils was observed to have a thickness ranging between approximately 12 to 20 feet. Due to the varying depth below existing grade to the compressible stratum, analysis indicated that a shallow footing foundation system supported over these compressible soils could experience settlements ranging from 1 to 5 inches. The anticipated magnitudes of settlement will vary across the building pad areas. This could result in differential settlements on the order of several inches over relatively short distances. These magnitudes of total and differential settlement are generally not considered tolerable for the types of structures proposed, and supporting the buildings on a shallow foundation system without any improvement to the highly compressible stratum is not considered to be practical.

Several foundation options have been presented in this report. These options include the construction of a deep foundation system supported over augered cast-in-place (ACIP) piles or driven timber piles as well as the implementation of a ground improvement program. The selection of the foundation option for each structure should be made based on the risk tolerance of the Owner to settlement, the construction and possible maintenance costs of the option, and the structural feasibility of the option for each of the various structures proposed for the site. The selection of a system for support of the slab-on-grade will also be necessary based on the foundation system selected and the anticipated building loads.

More detailed conclusions and recommendations for design and construction of the foundations and building slabs are provided in the following report.



Appoquinimink School District  
Phase 2 Fairview Campus Expansion  
March 14, 2017  
RE: Project No. 3975.GM

## PROJECT SUMMARY

Duffield Associates has completed our geotechnical evaluation for the proposed Appoquinimink School District Phase 2 Campus expansion in Odessa, Delaware. The following describes the subsurface conditions observed at the site and our recommendations for the design and construction of the proposed structures foundation systems. These services were provided in general accordance with our agreement dated November 15, 2016.

## REFERENCES UTILIZED

- A document titled "Preliminary Geotechnical Evaluation, Proposed Odessa Campus – Phase 1, Appoquinimink School District," prepared by Duffield Associates, Inc., dated July 2010.
- A document titled "Supplemental Geotechnical Evaluation, Proposed Odessa Campus, Appoquinimink School District," prepared by Duffield Associates, Inc., dated January 2016.
- A drawing titled "ACAD-ACAD-Duffield-Layout," prepared by Landmark Engineering, dated May 17, 2010.
- A document titled "Appoquinimink SD Soil Surcharge," prepared by MacIntosh Engineering, dated February 11, 2016, which indicates anticipated structural loads for the proposed buildings.
- An electronic mail correspondence from MacIntosh Engineering dated March 01, 2017 which included revised anticipated structural loads for the proposed buildings.

## PROPOSED BUILDING CONSTRUCTION

- Based on the information provided by Landmark Engineering and MacIntosh Engineering, the project consists of the construction of three new buildings on the north side of the campus with the following proposed and existing conditions:
  - High School with Gymnasium:
    - Footprint: Approximately 156,200 square-feet;
    - Finished Floor Elevation: 46 feet (project datum);
    - Existing Ground Surface Elevations in Footprint: Approximately 39 to 50 feet (project datum);
    - Cuts on the order of 4 feet; Fills on the order of 7 feet.
  - Performing Arts Building:
    - Footprint: Approximately 57,500 square-feet;
    - Finished Floor Elevation: 45 feet (project datum);
    - Existing Ground Surface Elevations in Footprint: Approximately 41 to 48 feet (project datum);
    - Cuts on the order of 3 feet; Fills on the order of 4 feet.



Appoquinimink School District  
Phase 2 Fairview Campus Expansion  
March 14, 2017  
RE: Project No. 3975.GM

- Middle School:
  - Footprint: Approximately 78,200 square-feet;
  - Finished Floor Elevation: 44 feet (project datum);
  - Existing Ground Surface Elevations in Footprint: Approximately 37 to 47 feet (project datum);
  - Cuts on the order of 3 feet; Fills on the order of 7 feet.
- The proposed buildings will be constructed at-grade (i.e., no basement level is currently proposed). The classroom portions of the buildings are anticipated to be two stories.
- Structural loads, provided by MacIntosh Engineering, are as follows:
  - Typical Exterior, Non-Bearing Continuous Wall Load: 3 kips/foot;
  - Typical Exterior, Continuous Wall Load at Gymnasium: 7 kips/foot
  - Typical Interior Column Loads: 230 kips;
  - Typical Exterior Column Loads: 115 kips.

#### EXISTING SITE CONDITIONS

- The area of the proposed buildings is currently a grass-covered field. The south and south-east sides of the site are occupied by previously constructed Phase 1 buildings and pavement areas.
- The site of the proposed Phase 2 campus buildings has existing ground surface elevations ranging between approximately 37 to 50 feet (project datum).
- A soil stockpile of excess material from the Phase 1 construction, with heights ranging between 4.5 to 16 feet was placed in a portion of the proposed Phase 2 buildings area. The stockpile was not placed as engineered fill.
- The stockpile of site fill soil was relocated to the Phase 2 building area following the removal of these soils from the area of the adjacent Elementary School, where the soils had been placed as a soil surcharge. The stockpile should be removed to the original subgrade elevation prior to final site grading for the proposed structures.



Appoquinimink School District  
Phase 2 Fairview Campus Expansion  
March 14, 2017  
RE: Project No. 3975.GM



## FIELD AND LABORATORY TESTING

### PREVIOUS GEOTECHNICAL EVALUATIONS IN PHASE 2 VICINITY

- Between May 28 and June 7, 2010, forty-two Standard Penetration Test (SPT) borings were performed in general accordance with ASTM D 1586 at the Fairview Campus. Five of the SPT borings (TB-14 through TB-18) were performed within the area of the Phase 2 structures. The test borings in the Phase 2 structure areas were performed to depths of approximately 20 feet below the existing ground surface.
- In December 2015, four SPT borings (TB-1B through TB-4B) were performed at the site through the temporary soil stockpile within the proposed building footprints to depths ranging between approximately 40 to 48 feet below the surface of the soils stockpile.
- The test borings were performed by a subcontractor to Duffield Associates, utilizing an ATV-mounted Diedrich D-50 drill rigs with hollow stem augers.
- Test boring logs, prepared by Duffield Associates during the previous evaluations, are enclosed.
- The approximate test boring locations from the previous evaluations are indicated on the enclosed Test Boring Location Sketch. Test boring logs, which describe the conditions observed during the previous evaluations are enclosed.

### PREVIOUS LABORATORY TESTING

Laboratory testing performed during the previous geotechnical evaluations at the site included index (moisture content, percent passing a No. 200 sieve, and Atterberg Limits determinations) and consolidation testing on selected samples. The results of the index testing are included on the enclosed test boring logs. In addition, test reports for the five consolidation tests performed are enclosed.



Appoquinimink School District  
Phase 2 Fairview Campus Expansion  
March 14, 2017  
RE: Project No. 3975.GM

## SUBSURFACE CONDITIONS

### GENERALIZED SITE GEOLOGY

This site is located within the Atlantic Coastal Plain Physiographic Province. Based on data from the Delaware Geological Survey (DGS), the site is generally underlain by the highly glauconitic sands of the Vincentown Formation of the Paleocene Era, with the eastern edge of the site mapped to be within the Calvert Formation of the Miocene Era, described as silt with some fine sand and shell beds, overlying the Vincentown Formation.

Based on the DGS mapping, the depth to weathered bedrock in the general area of the site is estimated to be on the order of 1,400 to 1,600 feet below existing grade.

### STRATIGRAPHIC CONDITIONS

Beneath a surface of topsoil and the fill materials of the temporary soil stockpile, the subsurface conditions in the test borings performed at the site in the Phase 2 building areas can generally be described as surficial interlayered medium to stiff consistency silt and clay and loose to medium dense sand, underlain by soft to medium consistency highly-plastic silt and clay. The high-plasticity silt/clay stratum was observed to be underlain by medium to dense sands in the Phase 2 campus area.

For discussion purposes, the subsurface conditions are described in the following table. It is noted that the sand soils of Stratum C, identified in the July 2010 Preliminary Geotechnical Evaluation was not encountered in the Phase 2 area. The Stratum C sands may be contiguous to the Stratum E sand where Stratum D was not present.

SUBSURFACE STRATUM	APPROXIMATE THICKNESS (FEET)	GENERALIZED DESCRIPTION <sup>[1]</sup>
A1 <sup>[2]</sup>	12 – 14	Temporary SOIL STOCKPILE: Miscellaneous interlayered silt/clay and sand
A2	0.4 – 0.7	TOPSOIL (approximately 5 to 8 inches)
B1	3 – 6	Orange-brown SILT/CLAY, trace to some fine to medium sand, trace gravel, trace coarse sand (medium to stiff consistency); USCS: ML, CL
B2 <sup>[3]</sup>	2 – 11	Orange, brown SAND, and to little silt, trace gravel, trace coarse sand (loose to medium dense); USCS: SM
D	12 – --- <sup>[4]</sup>	Gray, light purple, brown SILT/CLAY, trace fine sand (soft to medium consistency); USCS: MH, CH
E	--- <sup>[5]</sup>	Varicolored fine to coarse SAND, little to trace silt (dense); USCS: SM, SP
Notes:	<ol style="list-style-type: none"> <li>1. The soil descriptions utilized herein and on the test boring logs are defined in the attached General Notes.</li> <li>2. Stratum A1 observed in test borings TB-1B through TB-4B.</li> <li>3. Stratum B2 only observed in TB-15, TB-1B, and TB-2B.</li> <li>4. Stratum D not fully penetrated in test borings TB-15 to TB-18.</li> <li>5. Stratum E not fully penetrated in test borings.</li> </ol>	

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### GROUNDWATER

Groundwater was not encountered in the Phase 2 area during drilling for the 2010 and 2015 evaluations. Groundwater mapping by the Delaware Geologic Information Resource (DGIR) indicates annual average groundwater levels in “wet” conditions range from approximately 18 to 24 feet below the existing ground surface.

Groundwater levels at the site will be affected by seasonal and annual variations in precipitation. It is estimated that variations in groundwater levels several feet higher or lower than those observed during this evaluation could be experienced during extreme variations in precipitation. It is possible that localized perched groundwater conditions at shallower depths may be encountered during excavation.

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## DISCUSSION OF ANALYSIS

### HIGHLY-COMPRESSIBLE SOILS

Based on the field and laboratory testing programs performed during the 2010 and 2016 evaluations, the site is underlain by a layer of compressible high plasticity silt and clay (Stratum D), which was observed to have a thickness ranging between 12 to 20 feet. The depth below existing grade (pre soil stockpile) varies across the Phase 2 area. Consolidation testing was performed on two Shelby Tube samples collected in the vicinity of the Elementary School construction during the 2010 evaluation, and on 3 samples collected during the 2016 evaluation within the area of the proposed Phase 2 buildings. The consolidation testing results indicate that this stratum will exhibit relatively small vertical settlement if the loading conditions applied during and following construction are less than the maximum load that the soil has experienced over geological time. The maximum geologic load is referred to as the “preconsolidation pressure”. However, the consolidation results indicate that if the loading conditions exceed the preconsolidation pressure, significant amounts of settlement is anticipated.

Based on the consolidation results from the 2016 evaluations, the proposed site grading required, variable depths of cuts and fills, the varying depth to the Stratum D compressible soils, and structural loads provided, analysis indicates that localized building areas may experience loads that exceeds the preconsolidation pressure. Based on structures supported by a conventional shallow spread footing foundation system, analyses indicated settlements ranging from 1 to 5 inches could be experienced. The anticipated magnitudes of settlement will vary across the building pad areas. This could result in differential settlements on the order of 2 to 3 inches over relatively short distances. It is noted that during the full scale surcharging program performed during the Elementary School construction, settlements on the order 3 to 6 inches were induced prior to building construction.

Due to the estimated magnitudes of potential total and differential settlement, supporting the proposed buildings on a conventional shallow foundations (without improvement to the subsurface conditions) is not recommended. It is understood that constructing a soil surcharge of sufficient height to induce anticipated foundation settlement, similar to that performed for the adjacent elementary school, is not considered practical. Some alternative foundation options are discussed furthermore herein.

### FOUNDATION OPTIONS

Where spread footings result in significant potential for post construction settlement, a foundation system which is founded in the underlying dense sand soils or a soils which improves the settlement sensitive material should be considered.

A deep foundation system founded in the dense sand soils (Stratum E) observed below the compressible silt/clay stratum, would transfer the building loads (i.e., the columns and walls) to the underlying sand soils, which are less compressible. A deep foundation system would derive its support from a combination of frictional resistance and end bearing on the denser sand soils (Stratum E) encountered beneath the soft soil strata. The resulting structures would therefore experience minimal settlement. Based on the conditions encountered at the site, it is Duffield Associates’ opinion that several deep foundation systems could be considered for this project.



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The potential foundation systems considered feasible for the support of the proposed high school, performing arts building, and middle school structures include:

- Augered Cast-in-Place (ACIP) Piles. An ACIP pile foundation system consists of relatively small diameter piles drilled to a specified depth and pumped full with cementitious grout. ACIP piles can be a preferred foundation alternative in areas where vibrations and noise from pile driving installations are a concern because the installation methods result in relatively minor vibration and repetitive installation noise as compared to driven piles. A disadvantage of utilizing auger cast piles is that the capacity of the shaft is based on empirical methods and cannot be easily verified in the field through monitoring during construction without the performance of a load test, which can be costly and may not be required for the for the anticipated pile capacities presented.

Static analyses indicates that a 14-inch diameter ACIP pile, embedded a minimum of 10 feet into the dense sands of Stratum E, with a total pile length of approximately 35 feet from the currently proposed finished floor elevations, should develop an allowable capacity of 30 tons in compression based on a Factor of Safety of 2.5.

- Driven Timber Piles. A driven timber pile consists structural timber sections driven in into the soil profile with a pile hammer. Timber piles are often considered an economical driven pile alternative (opposed to steel pipe or precast concrete piles) for the depths and capacities anticipated on this project. A disadvantage of timber piles is their installation depth can be limited by the available timber lengths (typically 50-60 feet) since splicing is generally not effective. Due to the potential for soil variability, an effective probe pile program at the beginning of construction can be critical to an economical installation.

Static analyses indicates that a 12-inch diameter timber pile driven (provided in accordance with ASTM D 25) with an embedment of 5 to 10 feet into the dense sands of Stratum, with a total pile length of approximately 30-35 feet from the currently proposed finished floor elevations should develop an allowable capacity of 25 tons in compression based on a Factor of Safety of 2.5.

Duffield Associates can provide additional pile capacity estimates and recommendations for various pile sizes upon request. Settlement magnitudes for ACIP and Driven Timber piles embedded into the medium to dense sands of Stratum E are expected to be on the order of 1 inch or less.

It is noted that “static” methods of pile analysis used to estimate pile capacity and length are approximate, and based on various assumptions regarding the soil conditions. The actual pile lengths may vary somewhat in the field due to variations in the subsurface conditions, and the final pile length should be determined based on penetration resistance observed during installation.

If an ACIP pile foundation system is selected, a pile load test should be performed prior to construction of production piles to determine an appropriate pile length and economize the design, based on the load test results. If driven timber piles are selected, the contractor should submit a wave equation analysis demonstrating that the proposed pile driving system is capable of installing piles of the required capacity without damaging the piles. It is recommended that the Pile Driving Analyzer (PDA) be utilized during the installation of “probe” piles at the site to verify hammer efficiency and evaluate pile capacity (which can be estimated using the PDA). The PDA can also be



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used during production piles driving to help resolve issues regarding hammer performance, driving stressed in the pile, and pile capacity. Provisions for the use of the PDA should be included in the contract documents.

- **Ground Improvement.** An alternative to deep foundation pile foundations may include the implementation of a ground improvement program which “improves” the compressible silt/clay soils. While it is understood that the project schedule does not permit the construction of a designed surcharge program similar to the program implemented in the smaller Phase 1 portion of the site, a ground improvement system which provides localized densification beneath the building foundations could be considered to reduce post construction settlements of the superstructure. This system could include the installation of stone columns or aggregate piers.

Stone columns or aggregate piers (also known also as “rammed aggregate piers” or “vibro stone columns”) could result in a localized improvement in the consistency (stiffness) of the Stratum D silt/clay and reduce potential for settlement during and following construction. Ground improvement utilizing rammed aggregate piers involves the construction of piers of stone aggregate installed through the soils to be improved and generally involves driving a mandrel through these soils and subsequently filling the void created by the mandrel with stone, compacted in a number of lifts with a hydraulic ram during the extraction of the mandrel. This results in displacing (and densifying or stiffening) the soils immediately surrounding the pier. Depending on the scope of the ground improvement program, a shallow foundation system constructed over an improved subgrade typically could be designed for an allowable bearing capacity on the order of 3,000 to 4,000 pounds per square foot (psf), and post construction settlements on the order of 1 inch or less depending of the design of the improvement program.

If the use of some type of ground improvement is to be considered further, Duffield Associates can provide the names of several specialty contractors who have experience in the design and installation of different types of aggregate piers that can improve the foundation performance of the types of soils encountered at this site. Due to differences in the proprietary design and construction methods, the different specialty contractors will probably have varying approaches to improving the soils at the site, and therefore, it may be beneficial, economically, to further evaluate such a system.

#### **BUILDING SLAB-ON-GRADE AND EARTHWORK SEQUENCING**

Based on the subsurface data obtained during this evaluation and our experience at the site, it is Duffield Associates’ opinion that the natural site soils in the area which have been preloaded in the area of the of the existing “soil stockpile” are generally suitable for supporting the slab-on-grade of the proposed structure. Structural fill, placed over a stable subgrade, and compacted as recommended in this report, is also considered suitable for supporting the slab-on-grade. In addition, it is Duffield Associates’ opinion that lightly loaded non-bearing walls (e.g., single story masonry or light gauge structural steel partition walls) could be supported on thickened slab-on-grade sections.

It is noted that while the final building footprint has not been finalized, it is understood that portions of the final building will be located in areas which are not within the area of the “soil stockpile” while the soil in these areas these areas of the site are generally considered suitable for support of slabs-on-grade, there is an increase potential for total and differential settlement of



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these areas and a potential for differential settlement at the transition between the portion of the site covered by the existing "soil stockpile" and not covered.

Based on the proposed grading plan, variable depths of fill will be required in portions of the buildings. The largest amounts of fill are anticipated to be on the order of 7 feet in portions of the high school building and middle school. A sketch indicating the approximate variable depths of cuts and fills across the building areas has been enclosed. The addition of fill to the existing grade will result in some consolidation of the underlying site soils, with a greater magnitude of settlement occurring as the thickness of soil fill is increased. Where net fills are required, it is recommended that these be completed as early in the construction sequence as possible so that the majority of the fill-induced settlement can be completed before building slab-on-grade construction. Since the majority of the building areas have been subject to the "surcharge" of the temporary soil stockpile (which is to be removed prior to final site grading), it is anticipated that the majority of the fill-induced settlement under slab-on-grade areas will occur within 1 to 2 months following fill placement.



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## DESIGN RECOMMENDATIONS

### 1. PILE FOUNDATIONS

Following the selection of a foundation alternative, Duffield Associates should be contacted for consultation during the development of the geotechnical design specifications for a deep foundation or ground improvement program. Depending on the final design (e.g. capacities and sections), a load test may be required based on the requirements of the 2015 International Building Code. If performed, a static pile load test should be performed in accordance with ASTM D 1143, for each type of pile utilized. The requirements of the final geotechnical design are dependent of the load verification method used during construction, and should be incorporated into the design teams design document and bid packages. Following the selection for the foundation type by the design team, these issues can be addressed further.

### 2. PILE FOUNDATIONS

The following recommendations are for the construction of the Phase 2 buildings deep foundation systems. The selection for the foundation type by the design team should consider the risk and tolerances for settlement and differential settlement.

FOUNDATION TYPE	TOTAL PILE LENGTH	ESTIMATED EMBEDDMENT LENGTH INTO STRATUM E SANDS	ESTIMATED ALLOWABLE COMPRESSIVE CAPACITY
14-in. Dia. ACIP Pile	35 feet	10 feet	30 tons
12-in Dia. Timber Pile	30 - 35 feet	5-10 feet	25 tons

Settlement magnitudes for drilled and driven piles bearing in the dense Stratum E sands will primarily consist of elastic shortening of the piles and settlement is estimated to be on the order of ½ inch or less depending on the structural properties of the pile.

The estimated capacities above are for single-pile systems. The use of multiple piles in an area may reduce the load carrying capacity of the piles in the pile cap, depending on the size, spacing, and configuration of the piles. The reduction occurs as the result of stress changes in the soil during installation of adjacent piles and overlap of stresses transmitted to the soil from the building loads.

A minimum of 3 times the pile diameter is recommended for all driven or drilled piles. For piles subjected to lateral load, a minimum of 6 times the pile diameter is recommended. A reduction factor, based on a number of factors including pile spacing, number of piles and pile cap geometry may be appropriate based on the final design. Duffield Associates should be notified once pile size, spacing, and pile cap configurations are designed to evaluate the potential for capacity reduction.



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### **3. GROUND IMPROVEMENT - STONE COLUMN**

It is Duffield Associates' opinion that ground improvement prior to construction of shallow foundations could be achieved by utilizing stone columns such as rammed aggregate piers or vibro replacement stone column foundations. These proprietary, performance based systems should be designed by a professional engineer registered in the State of Delaware.

### **4. SLABS-ON-GRADE**

- a. Ground-supported floor slabs should be designed as free floating and should not be connected to the other structural elements (e.g., walls, framing, etc.) of the buildings. Due to the potential for differential settlement between pile supported elements and ground supported slabs, the foundation-slab interface and partition wall-slab interface should be designed to allow relative movement. Control joints should be utilized (within the slab) to control the location of possible cracking due to differential slab settlement.
- b. To reduce the potential of detrimental slab movement due to compressible soils underlying the site and variable depths of fill needed to achieve finished grade it is recommended that following final subgrade preparation as outlined herein, a biaxial geogrid (Synteen SF-11 or equivalent) be installed over the prepared subgrade prior to the placement of drainage stone subbase.
- c. A minimum 10 mil polyethylene vapor barrier and free-draining subbase, consisting of at least 4 inches of poorly graded crushed stone aggregate, such as AASHTO SP-57 stone, should be provided beneath all floor slabs.
- d. Subgrade conditions should be modeled for design utilizing a subgrade modulus,  $K_s$  of 125 pci, provided subgrade preparation is performed as recommended in this report.

### **5. SOIL PARAMETERS**

Backfill on "unyielding" retaining walls restrained from rotation at the top should be analyzed using the "at rest" earth pressure coefficient,  $K_0$ . The "active" and "passive" earth pressure coefficients,  $K_A$  and  $K_P$ , respectively, should be utilized for the design of "yielding" retaining walls, such as cantilevered walls. All retaining walls (including below-grade portions of the building) should be provided with free-draining, granular backfill materials and a drainage system and/or weep holes to relieve hydrostatic pressures on the walls. The free-draining backfill materials should extend behind the wall to a distance of at least 60% of the wall height. The recommended lateral earth pressure parameters for design are as follows.





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SOIL PARAMETER	STRATUM B (ML/CL)	ON-SITE STRUCTURAL FILL	GRANULAR STRUCTURAL FILL (less than 25% passing a No. 200 Sieve)
Moist Unit Weight, $\gamma_m$ (pcf)	115	125	130
Buoyant Unit Weight, $\gamma_b$ (pcf)	53	63	68
Cohesion, $c$ (psf)	0	0	0
Angle of Friction, $\phi$ (°)	28	32	34
At Rest Earth Coefficient, $K_o$	0.53	0.47	0.44
Active Earth Pressure Coefficient, $K_A$	0.36	0.31	0.28
Passive Earth Pressure Coefficient, $K_P$	2.77	3.25	3.5
Coefficient of Sliding Friction	0.35	0.42	0.45

## 6. SEISMIC DESIGN PARAMETERS

Based on the subsurface conditions encountered during the field exploration at the site and the review of regional geologic maps, an “E” site classification is recommended for the analysis of seismic conditions, as defined by 1613.3.2 of the 2015 International Building Code and Chapter 20 of the Civil Engineers Minimum Design Loads for Buildings and Other Structures (ASCE/SEI 7-10).

## 7. CONTROL JOINTS

Masonry walls should be provided with frequent control joints placed at architecturally convenient locations (e.g., windows and doorways) to provide a “preferred” location for differential settlement to occur to reduce the potential for cracking of the walls.

## 8. GROUNDWATER

Groundwater was not encountered during drilling in the Phase 2 area during the 2010 and 2015 evaluations. Groundwater mapping by the Delaware Geologic Information Resource (DGIR) indicates annual average groundwater levels in “wet” conditions range from approximately 18 to 24 feet below the existing ground surface.

It is possible that localized areas of perched groundwater could be encountered during excavations due to the fine-grained consistency of the shallow site soils. In addition, stormwater could accumulate in open excavations or low areas during construction. It is recommended that wherever groundwater is encountered during excavations, the resulting excavation should be over-excavated by at least 4 inches and replaced with AASHTO SP-57 stone to protect the exposed subgrade soils and to facilitate sumping.



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9. **SITE GRADING**

Site grading should be designed to provide positive drainage away from the proposed construction area. Positive site drainage should be maintained throughout the construction activities.

10. **ASSUMPTIONS**

The structural loading and the finished floor elevation considered in this evaluation should be verified by the project team prior to the completion of their design. If the proposed conditions vary from those considered herein, Duffield Associates should be notified to possibly modify the recommendations provided herein as required.

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## CONSTRUCTION RECOMMENDATIONS

### 1. SITE PREPARATION

Based on our previous work at the site, the “soil stockpile” located within portions of the proposed Phase 2 building areas was not placed as “engineered fill” (e.g., placed and compacted in accordance with the recommendations of July 2010 Preliminary Geotechnical Evaluation). The material utilized for construction of the surcharge was observed to be variable in texture and consistency, and is not considered suitable for support of foundations or slabs-on-grade as placed. It is recommended the existing “soil stockpile” be removed in its entirety from the proposed building areas prior to subgrade review, performance of proofroll, placement of fill, or foundation construction, as described herein.

### 2. PROOFROLLING AND SUBGRADE PREPARATION

Following the removal of the existing “soil stockpile”, the building areas should be rough excavated to proposed grades. Following rough grading and prior to foundation construction, placement of fill, or construction of the floor slabs, it is recommended that the exposed subgrade be proofrolled. The proofrolling should be performed using a minimum of two passes of a 10-ton vibratory roller in the presence of a qualified soils technician working under the supervision of a geotechnical engineer. The purpose of the proofrolling is to identify yielding subgrade conditions. The proposed construction area should be proofrolled at least 10 feet beyond the construction perimeters.

Yielding, or otherwise unsuitable subgrade conditions encountered within the proposed building areas, should be undercut to firm subgrade conditions and backfilled with compacted structural fill in accordance with the recommendations of this report. Alternatively, shallow yielding conditions observed, as determined by a qualified soils technician working under the supervision of a geotechnical engineer, could be stabilized through moisture conditioning of the exposed subgrade and recompaction. A qualified soils technician working under the supervision of a geotechnical engineer should confirm the consistency and texture of the exposed soils with the conditions encountered by this evaluation.

### 3. BULK GRADING

The construction schedule should be arranged such that the majority of the site regrading takes place during the drier periods (May through September), and as far in advance of the final construction as possible in order to allow consolidation settlement of the underlying soils to occur. The performance of site work during warm, dry periods will likely decrease the need for undercutting of soft surficial soils (areas can be aerated and recompacted rather than excavated and replaced with structural fill) and will increase the chances of using on-site soils as structural fill. In addition, large areas of bulk grading will likely be required to efficiently bulk excavate, place, aerate, and compact site soils. If earthwork is performed during wetter periods, there will likely be a significant increase in earthwork costs due to the need for importing off-site borrow or amending the on-site soils.

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#### **4. ACIP PILE INSTALLATION REVIEW**

The quality of auger cast piles is highly dependent on the construction method and appropriate construction quality control, including review of the placement of grout for the pile. Only contractors that can demonstrate experience in the installation of auger-cast piles and drilled displacement piles for similar projects and subsurface conditions should be allowed to bid on this project. Further, prior to the start of construction, the pile contractor should submit proposed installation and construction quality control methods.

A qualified engineering technician should be on site during pile construction to review installation. The technician should maintain records of pile installation including depth of pile installation, penetration rate of auger, and quantity and volume of grout utilized to fill the pile.

#### **5. DRIVEN TIMBER PILE INSTALLATION REVIEW**

Installation of piles should be reviewed on a full-time basis by a qualified soils technician under the supervision of a geotechnical engineer licensed in the State of Delaware. The purpose of this review is to monitor that piles have been installed in conformance with the driving criteria developed for the project. Records of the pile driving resistance should be maintained by a representative of the Owner to verify installation procedures and to provide technical assistance in the event that variations in driving are encountered. Should any conditions encountered during construction differ from those described in this report, Duffield Associates should be notified immediately in order to review and possibly modify these recommendations.

#### **6. GROUND IMPROVEMENT – STONE COLUMN CONSTRUCTION REVIEW**

The quality of ground improvement during stone column installation is highly dependent on the construction method and appropriate construction quality control. Only contractors that can demonstrate experience in the installation of the propriety stone column ground improvement for similar projects and subsurface conditions should be allowed to bid on this project. Further, prior to the start of construction, the contractor should submit ground improvement design including analysis, details, specification and a quality control plan signed and sealed by a Delaware registered professional engineering for review and approval by the Owner's representative as well as proposed installation and construction quality control methods.

A qualified engineering technician should be on site during construction to review installation. The technician should maintain records of installation depth, compaction effort, and stone quality and quantity, and well as document the implementation of the submitted quality control plan.

#### **7. RE-USE OF ON-SITE SOILS AS STRUCTURAL FILL**

- a. On-site soils free of organic material, topsoil, debris, and rock fragments in excess of 3 inches in their largest dimension may be suitable as structural fill.
- b. A majority of the on-site materials that will be available as fill will consist of the existing soil stockpile and material obtained from site grading consisting of the silt and clay soils of Strata B1, with isolated areas of sandy Stratum B2 materials. These soils are considered suitable for backfill, as long as the moisture content of the soils is within the range in which the specified compaction requirements can be achieved. The shallow soils at the site generally appear to be moisture content higher than at which compaction can generally be achieved, and drying may be



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required. Drying fine-grained soils requires an area in which to spread them out and extended periods of warm, dry weather, and time.

- c. If sufficient quantities of suitable on-site soils are not available for structural fill, imported borrow consisting of predominately granular soils conforming to the requirements of DelDOT Standard Specifications Borrow Type C (Backfill) should be utilized. AASHTO SP-57 stone could also be utilized as structural fill at locations, as recommended by the project engineer, and should be considered for localized, relatively deep fills such as foundation undercuts.

## **8. COMPACTION REQUIREMENTS**

- a. Structural fill should be placed in loose lifts with a maximum thickness of 8 inches.
- b. Each lift of fill placed within the proposed building construction areas (defined as the area extending at least 5 feet beyond the building footprint) should be compacted to at least 95% of the maximum dry density, as determined by the Modified Proctor test (ASTM D 1557).
- c. Structural fill placed in proposed pavement areas should be compacted to at least 90% of the maximum dry density, as determined by the Modified Proctor test.
- d. The placement and compaction of structural fill should be monitored on a full-time basis by a qualified technician working under the supervision of a geotechnical engineer.

## **9. EXCAVATION SAFETY**

All utility and foundation excavation should be performed in accordance with OSHA guidelines. Typically, medium stiff or stiffer silt/clay soils can be characterized by OSHA CFR Part 1926 Excavation Standards as Type C soils, and granular soils can be characterized by OSHA CFR Part 1926 Excavation Standards as Type B soils. Should it be required, all temporary sheeting, shoring, benching, and sloping should be designed by a qualified engineer registered in the State of Delaware.

## **10. PROTECTION OF SUBGRADE SOILS**

The shallow clay soils of Stratum B1 are considered highly moisture sensitive. Exposure of these soils to precipitation and construction traffic may weaken the soils and result in yielding subgrade conditions. In addition, if foundation excavations are left open, precipitation may result in the collection of water within the excavation. Provisions for removal of water by drainage or sumping are recommended. Subgrade soils disturbed by precipitation and construction traffic should be either scarified and re-compacted or undercut and replaced with structural fill as previously discussed.

If a winter construction schedule is proposed for the foundations, provisions for the protection of shallow foundations from frost heave should be included in the contract specifications.

## **11. GROUNDWATER CONTROL**

If “perched” groundwater is encountered during shallow foundation or utility construction, localized sumping may be required to control stormwater runoff into excavations during construction. It is recommended that wherever groundwater is encountered during shallow foundation or utility excavations, the resulting excavation should be over excavated by at least 4 inches and replaced with AASHTO SP-57 stone to protect the exposed subgrade soils and to facilitate sumping.



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## **12. SUBSURFACE DATA**

All contractors interested in bidding on phases of this work, which involve subsurface conditions, should be given full access to this report so that they can develop their own interpretations of the available data.

## **13. CONSTRUCTION REVIEW**

It is recommended that the project budget include provisions for the cost for independent construction monitoring of the earthwork and foundation construction by a qualified engineering firm retained by the Owner, to review conformance of construction with the recommendations of the project geotechnical evaluation, as well as the project plans and specifications.

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## QUALIFICATIONS

The recommendations of this report have been prepared according to generally accepted soil and foundation engineering practice, and are based on the conditions encountered by the test borings performed at the site. Although soil quality has been inferred from the interpolation of the sampling data, you should explicitly note that subsurface conditions beyond the test borings are, in fact, unknown. Should any conditions encountered during construction differ from those described in this report, this office should be notified immediately in order to review, and possibly modify these recommendations. This report applies solely to the size, type, and location of the structure described herein. In the event that changes are proposed, this report will not be considered valid unless the changes have been reviewed and the recommendations of this report modified and re-approved in writing by Duffield Associates, Inc.

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## APPENDICES

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TEST BORING LOCATION SKETCH

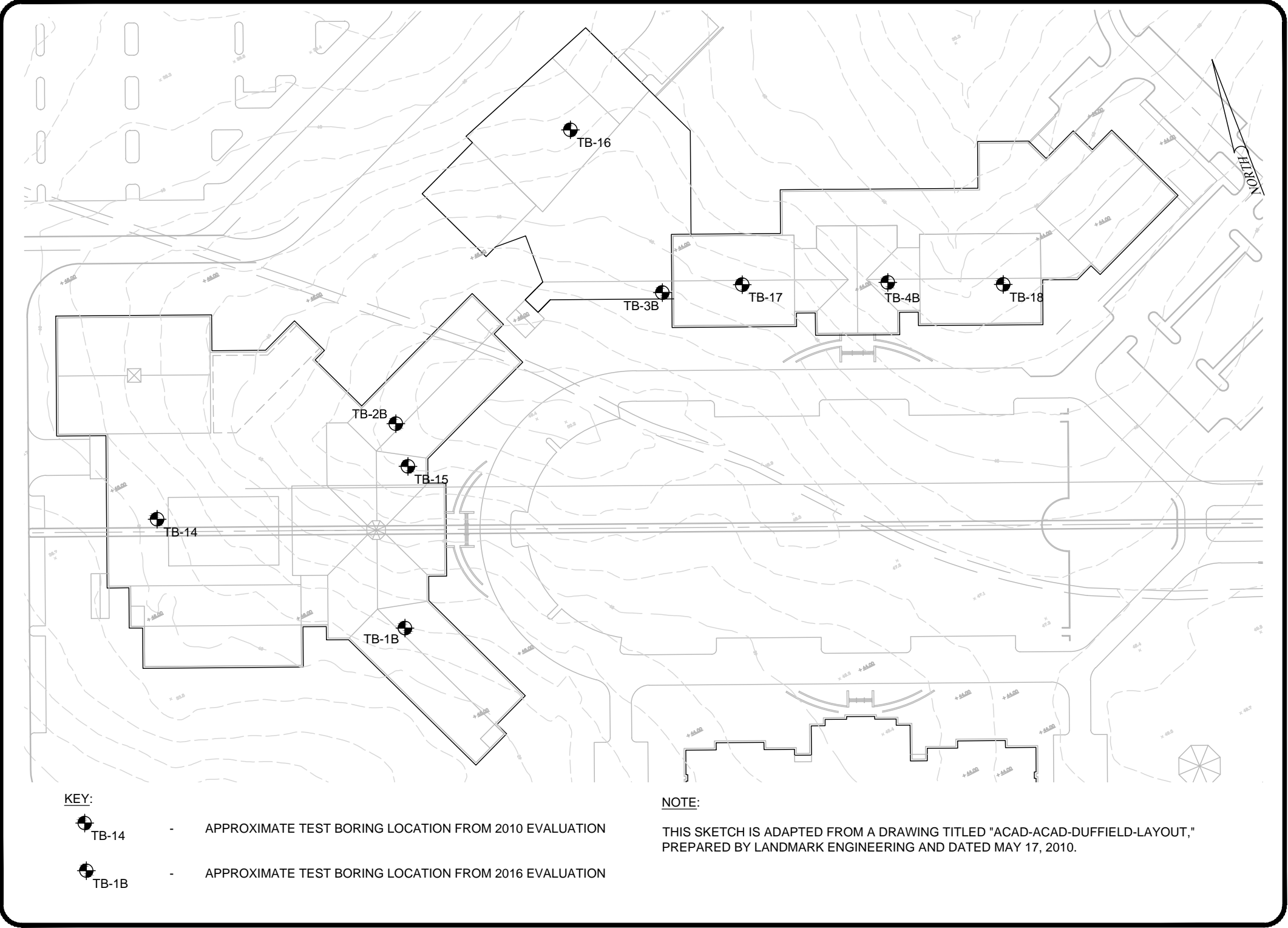
TEST BORING LOGS FROM PREVIOUS EVALUATIONS


APPROXIMATE CUT/FILL DEPTHS SKETCH

CONSOLIDATION TEST REPORTS

GENERAL NOTES







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DESIGNED BY:	JFC
DRAWN BY:	ARS
CHECKED BY:	JFC
FILE:	B-3975GM-02


TEST BORING LOCATION SKETCH  
  
**APPOQUINIMINK SCHOOL DISTRICT  
 PROPOSED ODESSA CAMPUS**  
  
 ODESSA-NEW CASTLE COUNTY-DELAWARE

DATE:  
 13 MARCH 2017


SCALE:  
 1"= 100'

PROJECT NO.  
 3975.GM

SHEET:  
 FIGURE 1

 <b>DUFFIELD ASSOCIATES</b> <i>Consultants in the Geosciences</i>		<b>TEST BORING TB-14</b> (Page 1 of 1)										
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC			Date Started : June 1, 2010 Date Completed : June 1, 2010 Logged by : TRA Weather : P. cloudy, windy, 80's Driller/Agency : W. Proud/Feldmann Bothers			Drilling Equipment: ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation: 41 feet						
Depth in feet	Surf. Elev. 41 ft	GRAPHIC	USCS	Sample Condition <input checked="" type="checkbox"/> Remolded	Water Levels	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL
				DESCRIPTION								
0												
40												
			CL			<input checked="" type="checkbox"/>	S-1	3-3-4	0.9			
5						<input checked="" type="checkbox"/>	S-2	3-4-6	1.3	33.1	97.5	
35						<input checked="" type="checkbox"/>	S-3	2-3-4	1.5			
10			CH			<input checked="" type="checkbox"/>	S-4	2-3-3	1.5			
15						<input checked="" type="checkbox"/>	S-5	2-2-2	1.5			
25						<input checked="" type="checkbox"/>	S-6	16-10-9	1.3			
20			SM			<input checked="" type="checkbox"/>						
20												
25												
30												
35												
40												
NOTES: 1. Test boring terminated at ± 20 feet b.e.g.s. (below existing ground surface) 2. Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg". 3. Boring caved and dry at 6.2 feet b.e.g.s. upon completion. 4. Test boring backfilled with auger cuttings upon completion.												

TL06PASSIM% 3975.GC.GPJ DUFFIELD.GDT 7/7/10


 <b>DUFFIELD ASSOCIATES</b> Consultants in the Geosciences				<b>TEST BORING TB-15</b> (Page 1 of 1)									
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC				Date Started : June 1, 2010 Date Completed : June 1, 2010 Logged by : TRA Weather : P. cloudy, windy, 80's Driller/Agency : W. Proud/Feldmann Bothers		Drilling Equipment : ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation : 48 feet							
Depth in feet	Surf. Elev. 48 ft	GRAPHIC	USCS	Sample Condition <input checked="" type="checkbox"/> Remolded	Water Levels	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL	
DESCRIPTION													
0				Topsoil (5 inches)									
45			SM	Dark brown, orange-brown, red-brown fine to medium SAND and clayey SILT, trace coarse sand, trace gravel (moist)			<input checked="" type="checkbox"/>	S-1	1-3-6	1.2			
5				Brown, orange-brown, yellow-brown fine to medium SAND, some silt, trace coarse sand (moist)			<input checked="" type="checkbox"/>	S-2	4-6-8	1.3			
40				Orange-brown, yellow-brown fine to medium SAND, some to and silt, trace coarse sand (moist)			<input checked="" type="checkbox"/>	S-3	6-8-7	1.3			
10				Orange-brown, light brown, gray fine to coarse SAND, and gravel, little silt (moist)			<input checked="" type="checkbox"/>	S-4	40-18-10	1.2	11.4	21.9	
35			CH	Purplish light gray, yellow-brown, slightly mottled silty CLAY, trace fine sand (moist)			<input checked="" type="checkbox"/>	S-5	2-2-2	1.5			
15				Purple, purplish-gray, orange-brown, very dark red-brown, mottled CLAY, trace fine sand, trace iron oxide (medium sand sized), (moist)			<input checked="" type="checkbox"/>	S-6	2-2-3	1.5			
30													
20													
30													
15													
35													
10													
40													

**NOTES:**

- Test boring terminated at ± 20 feet b.e.g.s. (below existing ground surface)
- Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".
- Boring caved and dry at 13.4 feet b.e.g.s. upon completion.

- Test boring backfilled with auger cuttings upon completion.

TBLOGPASSIM% 3975.GC.GPJ DUFFIELD.GDT 7/7/10




 <b>DUFFIELD ASSOCIATES</b> <i>Consultants in the Geosciences</i>				<b>TEST BORING TB-16</b> (Page 1 of 1)																																																																																																																																																																																																																																																																																																																																																					
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC				Date Started : May 28, 2010 Date Completed : May 28, 2010 Logged by : TRA Weather : P. cloudy, windy, 70's Driller/Agency : W. Proud/Feldmann Bothers		Drilling Equipment : ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation : 42 feet																																																																																																																																																																																																																																																																																																																																																			
				<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Depth in feet</th> <th rowspan="2">Surf. Elev. 42 ft</th> <th rowspan="2">GRAPHIC</th> <th rowspan="2">USCS</th> <th colspan="2">Sample Condition</th> <th colspan="2">Water Levels</th> <th rowspan="2">SAMPLES</th> <th rowspan="2">Sample Number</th> <th rowspan="2">Blows per 6 inches</th> <th rowspan="2">Recovery (ft)</th> <th rowspan="2">Moisture Content (%)</th> <th rowspan="2">Percent Passing 200 Sieve</th> <th rowspan="2">WATER LEVEL</th> </tr> <tr> <th><input checked="" type="checkbox"/> Remolded</th> <th></th> <th></th> <th></th> </tr> <tr> <th colspan="15" style="text-align: center;">DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>0</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>40</td> <td></td> <td></td> <td>CL</td> <td></td> <td></td> <td></td> <td></td> <td><input checked="" type="checkbox"/></td> <td>S-1</td> <td>1-1-4</td> <td>0.7</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td><input checked="" type="checkbox"/></td> <td>S-2</td> <td>3-4-5</td> <td>1.2</td> <td></td> <td></td> <td></td> </tr> <tr> <td>5</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td><input checked="" type="checkbox"/></td> <td>S-3</td> <td>2-2-2</td> <td>1.5</td> <td>48.8</td> <td>95.9</td> <td></td> </tr> <tr> <td>35</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td><input checked="" type="checkbox"/></td> <td>S-4</td> <td>2-2-3</td> <td>1.5</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td>CH</td> <td></td> <td></td> <td></td> <td></td> <td><input checked="" type="checkbox"/></td> <td>S-5</td> <td>2-2-2</td> <td>1.5</td> <td></td> <td></td> <td></td> </tr> <tr> <td>10</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td><input checked="" type="checkbox"/></td> <td>S-6</td> <td>2-2-2</td> <td>1.5</td> <td></td> <td></td> <td></td> </tr> <tr> <td>30</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>15</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>25</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>20</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>20</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>25</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>15</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>30</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>10</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>35</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>5</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>40</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>												Depth in feet	Surf. Elev. 42 ft	GRAPHIC	USCS	Sample Condition		Water Levels		SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL	<input checked="" type="checkbox"/> Remolded				DESCRIPTION															0																														40			CL					<input checked="" type="checkbox"/>	S-1	1-1-4	0.7												<input checked="" type="checkbox"/>	S-2	3-4-5	1.2				5								<input checked="" type="checkbox"/>	S-3	2-2-2	1.5	48.8	95.9		35								<input checked="" type="checkbox"/>	S-4	2-2-3	1.5							CH					<input checked="" type="checkbox"/>	S-5	2-2-2	1.5				10								<input checked="" type="checkbox"/>	S-6	2-2-2	1.5				30															15															25															20															20															25															15															30															10															35															5															40										
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**NOTES:**

1. Test boring terminated at ± 20 feet b.e.g.s. (below existing ground surface)
2. Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg".
3. Boring caved and dry at 3.8 feet b.e.g.s. upon completion.


4. Test boring backfilled with auger cuttings upon completion.

TBLOGPASSIM% 3975.GC.GPJ DUFFIELD.GDT 7/7/10

 <b>DUFFIELD ASSOCIATES</b> <i>Consultants in the Geosciences</i>		<b>TEST BORING TB-17</b> (Page 1 of 1)											
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC				Date Started : May 28, 2010 Date Completed : May 28, 2010 Logged by : TRA Weather : P. cloudy, windy, 70's Driller/Agency : W. Proud/Feldmann Bothers				Drilling Equipment : ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation : 45 feet					
Depth in feet	Surf. Elev. 45 ft	GRAPHIC	USCS	Sample Condition <input checked="" type="checkbox"/> Remolded	Water Levels	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL	
				<b>DESCRIPTION</b>									
0	45		CL	Topsoil (6 inches)									
				Brown silty CLAY, little gravel, trace to little medium to coarse sand (moist)				<input checked="" type="checkbox"/>	S-1	3-3-5	1.0		
5	40		CH	Purplish light gray, orange-brown, mottled CLAY (moist)				<input checked="" type="checkbox"/>	S-2	3-4-5	1.5		
				Purplish light gray, orange-brown, mottled CLAY (moist to wet)				<input checked="" type="checkbox"/>	S-3	2-2-4	1.5		
10	35			Purplish light gray, yellow-brown, orange-brown, slightly mottled CLAY (moist to wet)				<input checked="" type="checkbox"/>	S-4	2-2-3	1.5		
15	30			Purple, yellow-brown, purplish, light gray, slightly mottled CLAY, trace coarse sand, trace fine sand (moist to wet)				<input checked="" type="checkbox"/>	S-5	2-2-3	1.5	62.0	94.9
20	25			Purple, red-brown CLAY, trace fine-medium sand, trace iron oxide along fissures (moist)				<input checked="" type="checkbox"/>	S-6A	5-6-7	1.5		
			CH	Purple, light gray, orange-brown silty CLAY, some fine to medium sand, trace coarse sand				<input checked="" type="checkbox"/>	S-6B				
25	20												
30	15												
35	10												
40	5												
NOTES: 1. Test boring terminated at ± 20 feet b.e.g.s. (below existing ground surface) 2. Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg". 3. Boring caved and dry at 3.8 feet b.e.g.s. upon completion. 4. Test boring backfilled with auger cuttings upon completion.													

 <b>DUFFIELD ASSOCIATES</b> <i>Consultants in the Geosciences</i>		<b>TEST BORING TB-18</b> (Page 1 of 1)										
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GC				Date Started : June 1, 2010 Date Completed : June 1, 2010 Logged by : TRA Weather : P. cloudy, windy, 70's Driller/Agency : W. Proud/Feldmann Bothers			Drilling Equipment : ATV-Mounted Diedrich D-50 Drilling Methods : 3.75" H.S.A. Surface Elevation : 42 feet					
Depth in feet	Surf. Elev. 42 ft	GRAPHIC	USCS	Sample Condition <input checked="" type="checkbox"/> Remolded	Water Levels	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL
				DESCRIPTION								
0												
					Topsoil (6 inches)							
40			ML		Orange-brown, gray-brown clayey SILT, and fine to medium sand, little coarse sand and gravel (moist)	<input checked="" type="checkbox"/>	S-1	3-3-6	1.0	16.8	54.4	
			CL		Light gray, light brown, light gray-brown silty CLAY, little gravel, trace to little fine to coarse sand (moist)	<input checked="" type="checkbox"/>	S-2	3-12-18	1.1			
5			SM		Orange-brown, gray-brown, brown fine to medium SAND, trace coarse sand, trace gravel, trace silt (moist)	<input checked="" type="checkbox"/>	S-3A S-3B	6-4-4	1.4			
35					Light gray, yellow-brown, purplish light gray, slightly mottled CLAY (moist)	<input checked="" type="checkbox"/>						
					Purplish, light gray, yellow-brown, mottled silty CLAY, trace fine sand (moist)	<input checked="" type="checkbox"/>	S-4	1-2-3	1.5			
10			CH		Purple, light gray, yellow-brown, slightly mottled silty CLAY, trace fine sand, trace iron oxide along fissures (moist)	<input checked="" type="checkbox"/>	S-5	1-2-3	1.5			
30					Light purple, light gray, yellow-brown, orange-brown, mottled silty CLAY, some to little fine to medium sand, trace coarse sand (moist to wet)	<input checked="" type="checkbox"/>	S-6	2-3-5	1.5			
15												
25												
20												
20												
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15												
30												
10												
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40												
NOTES: 1. Test boring terminated at ± 20 feet b.e.g.s. (below existing ground surface) 2. Ground surface elevation data based on topographic information provided to Duffield Associates by Landmark Engineering in an electronic file titled "ACAD-ACAD-Duffield-layout.dwg". 3. Boring caved and dry at 4.5 feet b.e.g.s. upon completion. 4. Test boring backfilled with auger cuttings upon completion.												





















TELOGPASSW% 3975.GC.GPJ DUFFIELD.GDT 7/7/10

<div><div>DUFFIELD ASSOCIATES</div><div>Soil, Water &amp; the Environment</div></div>				TEST BORING TB-1B									
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GL				Date Started : December 15, 2015		Drilling Equipment : ATV-Mounted Diedrich D-50							
				Date Completed : December 15, 2015		Drilling Methods : HSA (SPT, ASTM 1586)							
				Logged by : IMF		Surface Elevation : 51.21 feet							
				Weather : Clear, windy 50s									
				Driller/Agency : J. Feldmann/CGC Geoservices, LLC									
Depth in feet	Surf. Elev. 51.21 ft	GRAPHIC	USCS	Sample Condition	Water Levels	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL	
				<div><div></div>Auger Cuttings</div> <div><div></div>Remolded</div> <div><div></div>Undisturbed</div>									
DESCRIPTION													
0													
50													
5													
45													
10													
40													
							S-1	7-14-20-26	0.5				
			SM	Orange, brown medium to coarse SAND, little to some silt, little to some gravel (moist)			S-2A	11-9-7-7	1.8				
15				Orange, brown SILT, trace fine sand			S-2B						
35			ML										
20							S-3	2-3-3-4	2.0				
30			MH	Gray, brown, orange SILT, trace to little silt, trace fine sand (moist) SHELBY TUBE ST-1: 20.0' - 22.0' - Gray, brown, orange SILT, trace fine sand, trace cemented silt fragments; Atterberg Limits: Liquid Limit: 75; Plasticity Index: 30 Gray, light purple SILT, trace fine sand (lenses of orange-brown weathering) (moist)			ST-1	P-U-S-H	2.0	66.3	92.6		
25				Gray, light purple SILT, trace fine sand (lenses of orange-brown weathering) (moist)			S-4	2-2-3-4	2.0				
25				Dark brown, purple, medium SILT, trace fine sand			S-5A	1-2-3-4	2.0				
			MH	SHELBY TUBE ST-2: 26.0' - 28.0'			S-5B						
				Dark gray medium SILT and coarse SAND			ST-2	P-U-S-H	2.0				
30				Dark gray, light purple, orange SILT, some medium to coarse sand, trace gravel, trace silt			S-6A	5-5-7-12	2.0				
20			MH				S-6B						
35													
15			SP	Red, orange, light gray medium to coarse SAND, little fine sand, trace silt			S-7	16-24-26-36	2.0				
40													

NOTES:  
1. Test boring terminated at ± 35.0 feet b.e.g.s. (below existing ground surface)  
2. Groundwater not encountered during drilling.  
3. Borehole backfilled with soil cuttings upon completion.  
4. Test boring offset ± 2 feet due to unstraight entrance into hole.

NOTES:

1. Test boring terminated at ± 35.0 feet b.e.g.s. (below existing ground surface)
2. Groundwater not encountered during drilling.
3. Borehole backfilled with soil cuttings upon completion.
4. Test boring offset ± 2 feet due to unstraight entrance into hole.

<div><div>DUFFIELD ASSOCIATES</div><div>Soil, Water &amp; the Environment</div></div>				TEST BORING TB-2B									
				(Page 1 of 1)									
Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GL				Date Started : December 15, 2015 Date Completed : December 15, 2015 Logged by : IMF Weather : Clear, windy 50s Driller/Agency : J. Feldmann/CGC Geoservices, LLC				Drilling Equipment : ATV-Mounted Diedrich D-50 Drilling Methods : HSA (SPT, ASTM 1586) Surface Elevation : 55.41 feet					
Depth in feet	Surf. Elev. 55.41 ft	GRAPHIC	USCS	Sample Condition <div><div> Auger Cuttings</div><div> Remolded</div><div> Undisturbed</div></div>	Water Levels	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL	
DESCRIPTION													
0	55			FILL									
5	50			FILL									
10	45			FILL			S-1	3-11-13-15	0.8				
15	40		SP	White, yellow medium to coarse SAND, little gravel, trace silt			S-2A S-2B	4-21-30-25	1.8				
20	35			Orange, brown SILT, trace fine sand			S-3A S-3B	4-6-6-6	1.6				
25	30		MH	Light gray SILT, trace fine sand			S-4	2-2-2-2	2.0				
30	25			Light gray SILT trace fine sand			S-5	1-2-3-3	2.0				
35	20			SHELBY TUBE ST-1: 25.0' - 27.0'			ST-1	P-U-S-H	1.0				
40	15			SHELBY TUBE ST-2: 28.0' - 30.0' - Light gray SILT, trace fine sand, trace cemented silt fragments; Atterberg Limits: Liquid Limit: 64; Plasticity Index: 25 Light gray, purple SILT, trace to little coarse sand (rust-colored lenses in clay)			ST-2	P-U-S-H	2.0	71.5	98.4		
			SP	Light gray, purple SILT, little to some medium to coarse sand			S-6A S-6B	3-4-12-13	2.0				
				Orange, brown medium to coarse SAND, trace silt			S-7	14-33-31-41	1.5				
				Varicolored medium to coarse SAND, trace to little gravel, trace silt (wet)									


NOTES:  
1. Test boring terminated at ± 40.0 feet b.e.g.s. (below existing ground surface)  
2. Groundwater not encountered during drilling.  
3. Borehole backfilled with soil cuttings upon completion.

NOTES:

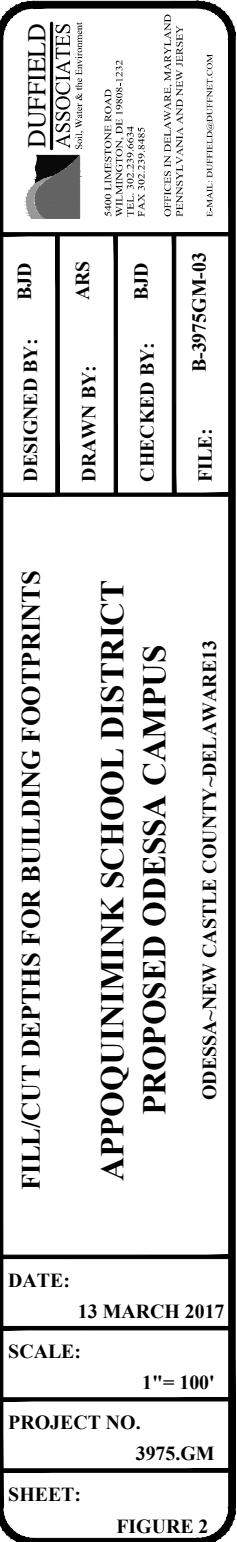
1. Test boring terminated at ± 40.0 feet b.e.g.s. (below existing ground surface)
2. Groundwater not encountered during drilling.
3. Borehole backfilled with soil cuttings upon completion.

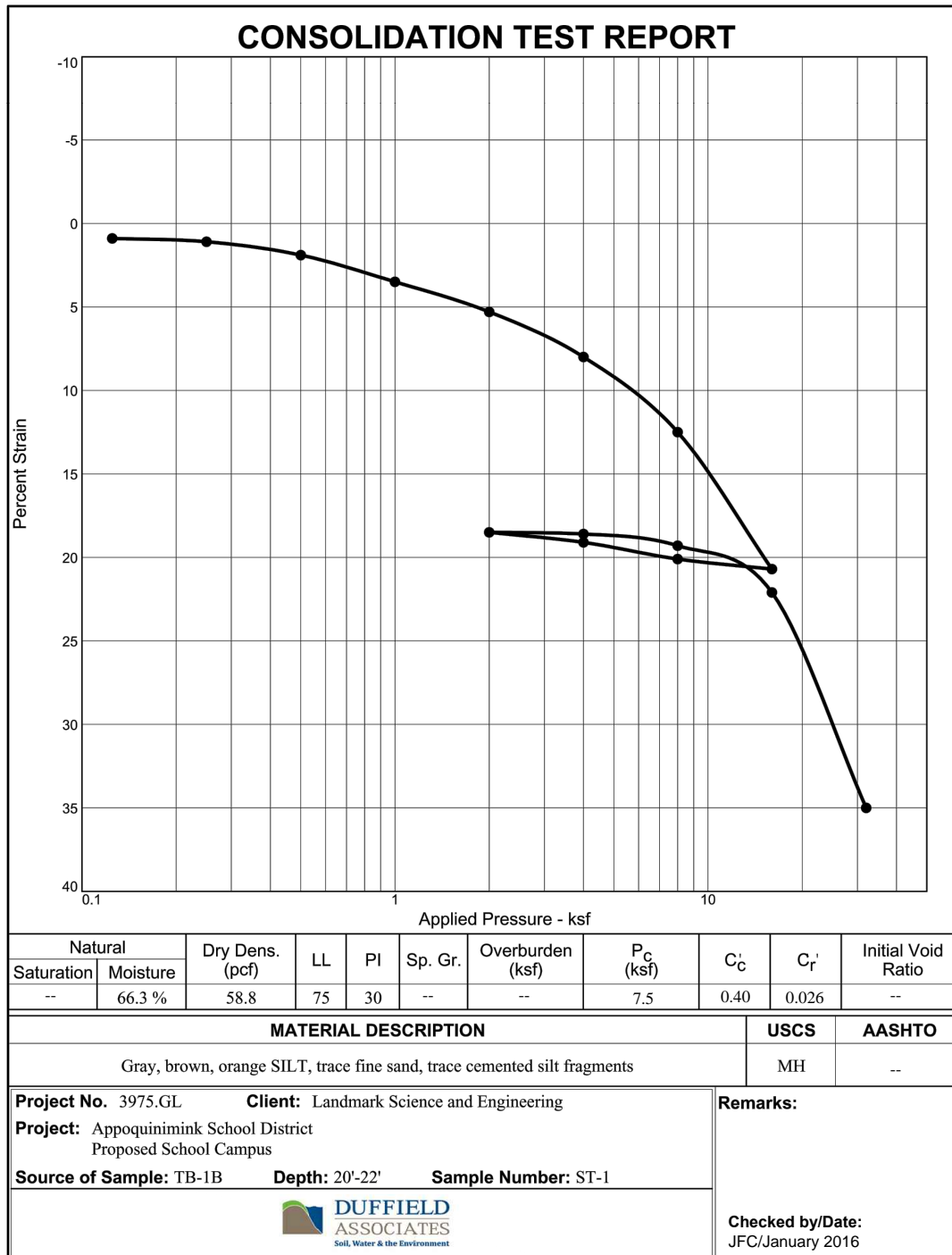


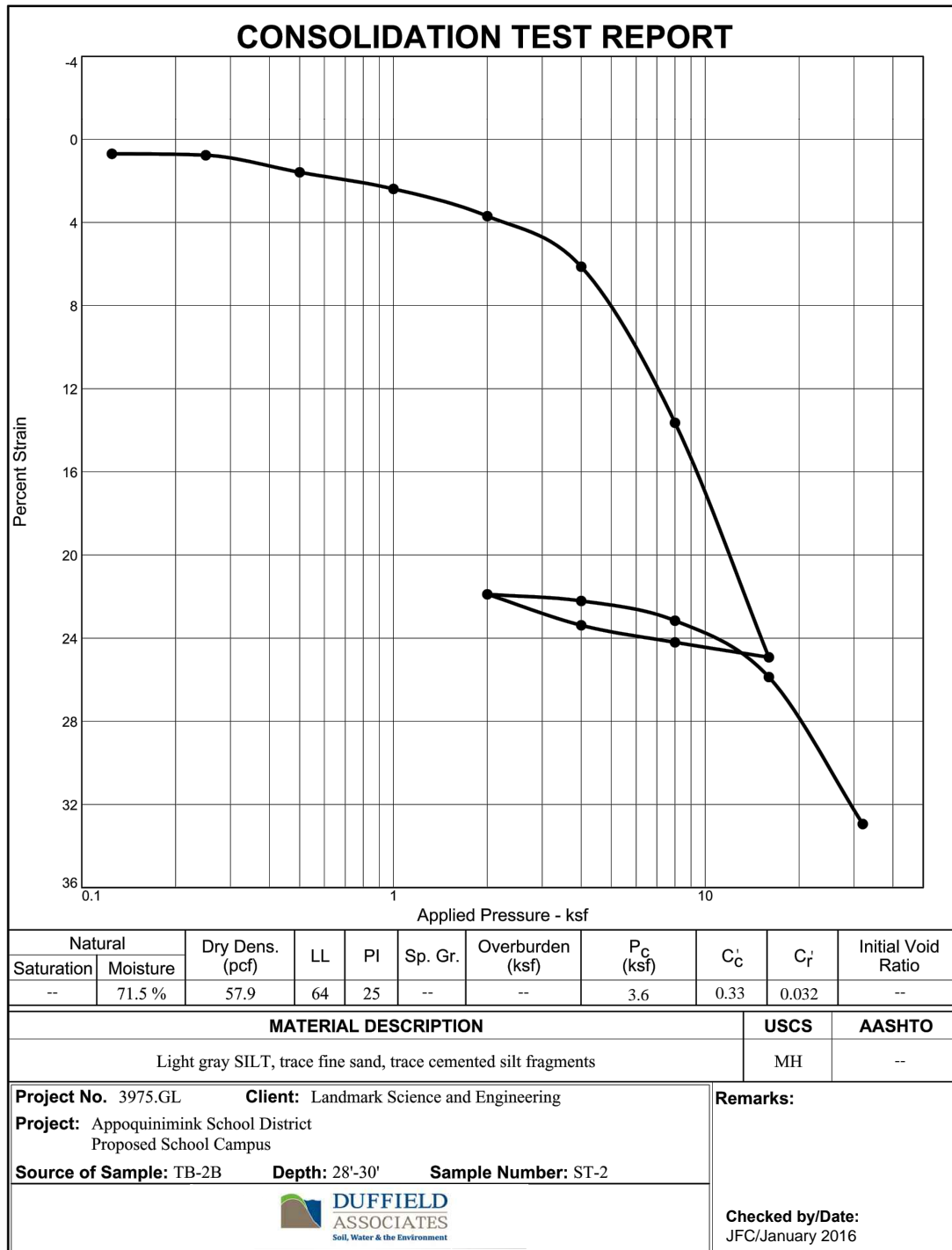
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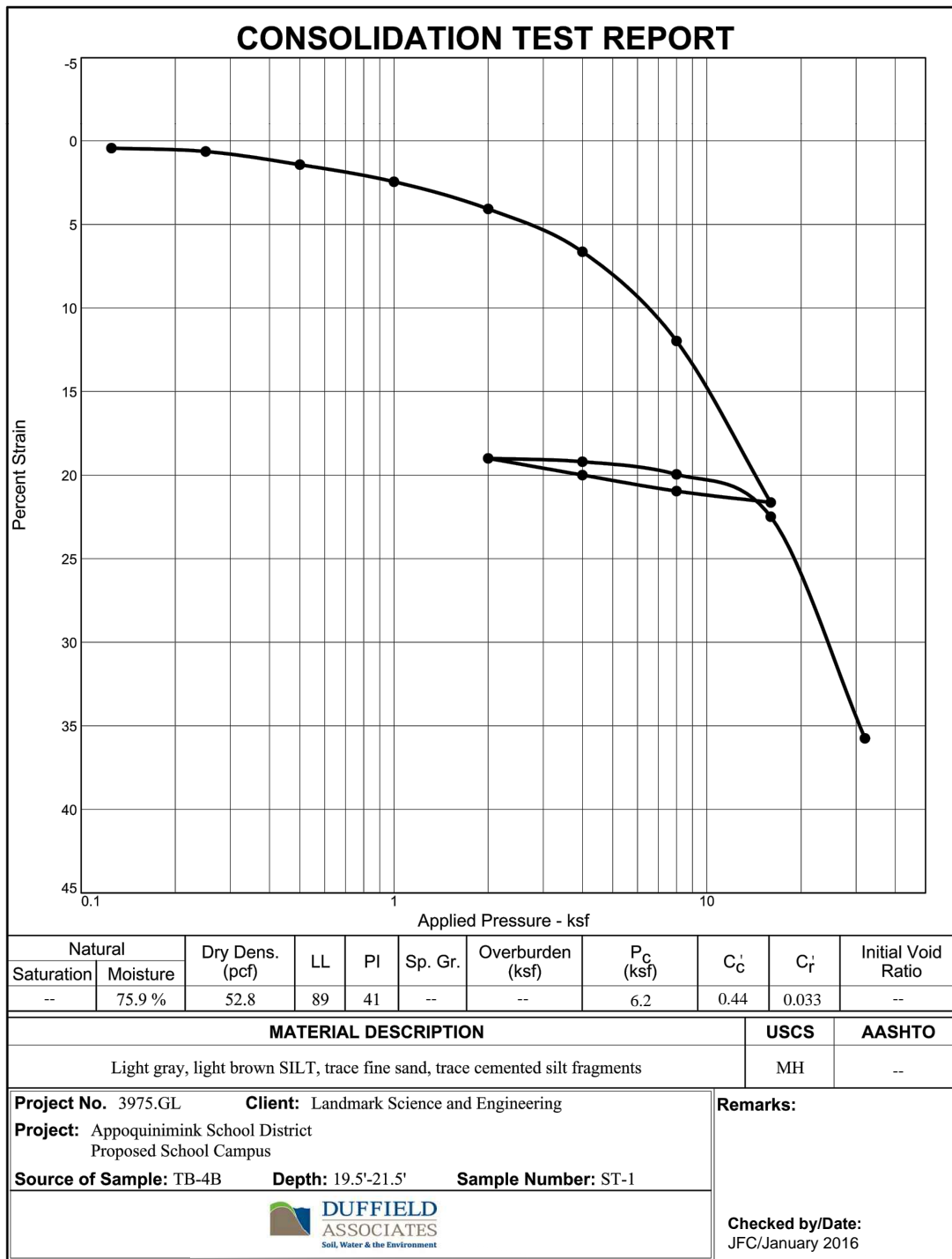
<div><div><b>DUFFIELD</b> ASSOCIATES <small>Soil, Water &amp; the Environment</small></div></div>				TEST BORING TB-4B									
				(Page 1 of 1)									
<div>Geotechnical Evaluation Appoquinimink School District Proposed School Campus Odessa, Delaware Project No. 3975.GL</div>				<div>Date Started : December 16, 2015 Date Completed : December 17, 2015 Logged by : IMF Weather : Overcast, 50s Driller/Agency : J. Feldmann/CGC Geoservices, LLC</div>				<div>Drilling Equipment : ATV-Mounted Diedrich D-50 Drilling Methods : HSA (SPT, ASTM 1586) Surface Elevation : 51.13 feet</div>					
Depth in feet	Surf. Elev. 51.13 ft	GRAPHIC	USCS	Sample Condition	Water Levels	SAMPLES	Sample Number	Blows per 6 inches	Recovery (ft)	Moisture Content (%)	Percent Passing 200 Sieve	WATER LEVEL	
				<div><div></div>Auger Cuttings</div> <div><div></div>Remolded</div> <div><div></div>Undisturbed</div>									DESCRIPTION
0													
50													
5													
45													
10													
40													
15			ML										
35													
20													
30													
25			MH										
25													
30													
20													
35													
15			SP										
40													

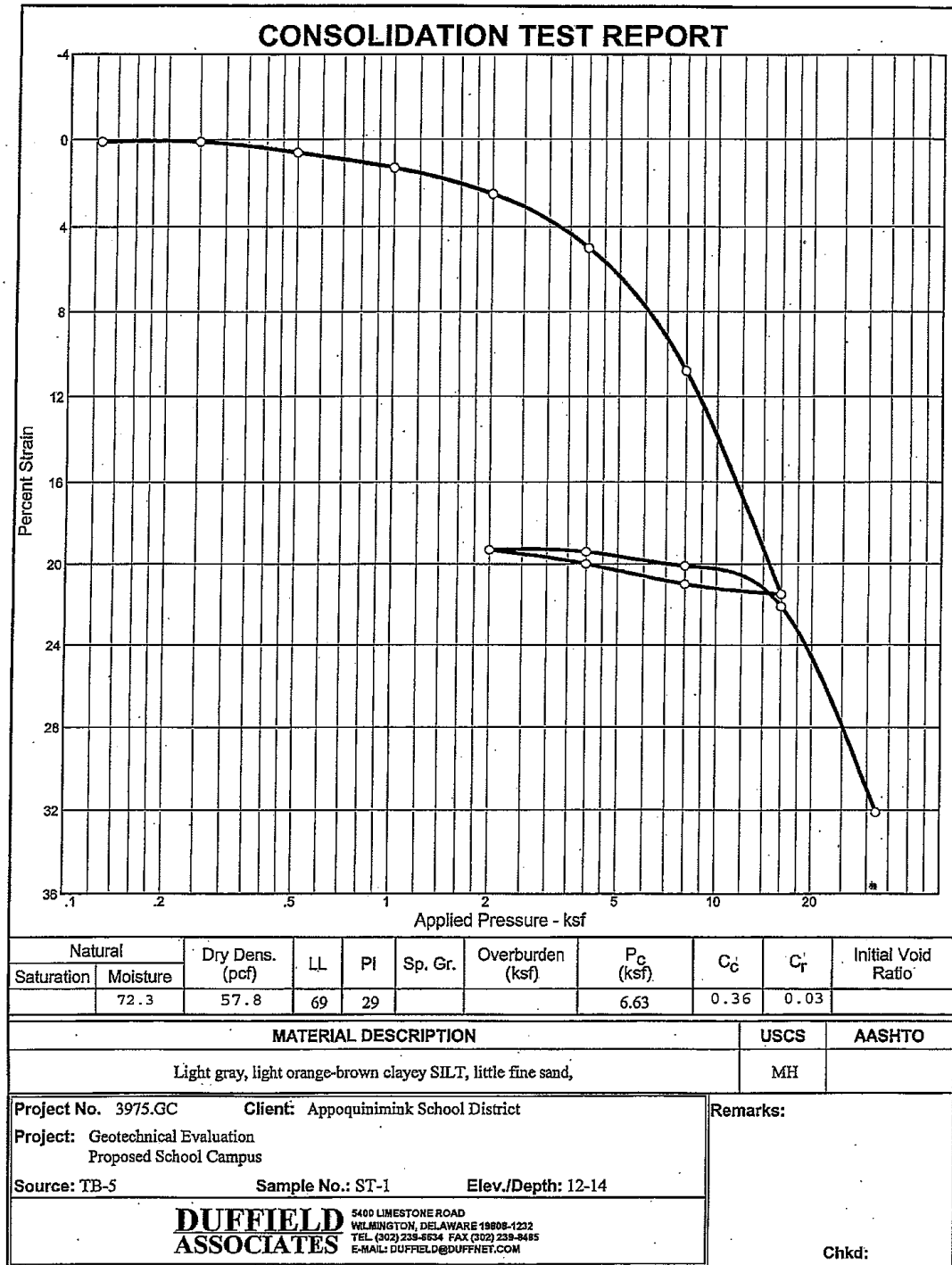
NOTES:  
1. Test boring terminated at ± 36.5 feet b.e.g.s. (below existing ground surface)  
2. Groundwater not encountered during drilling.  
3. Borehole backfilled with soil cuttings upon completion.  
4. Test boring offset ± 2 feet due to unstraight entrance into hole.

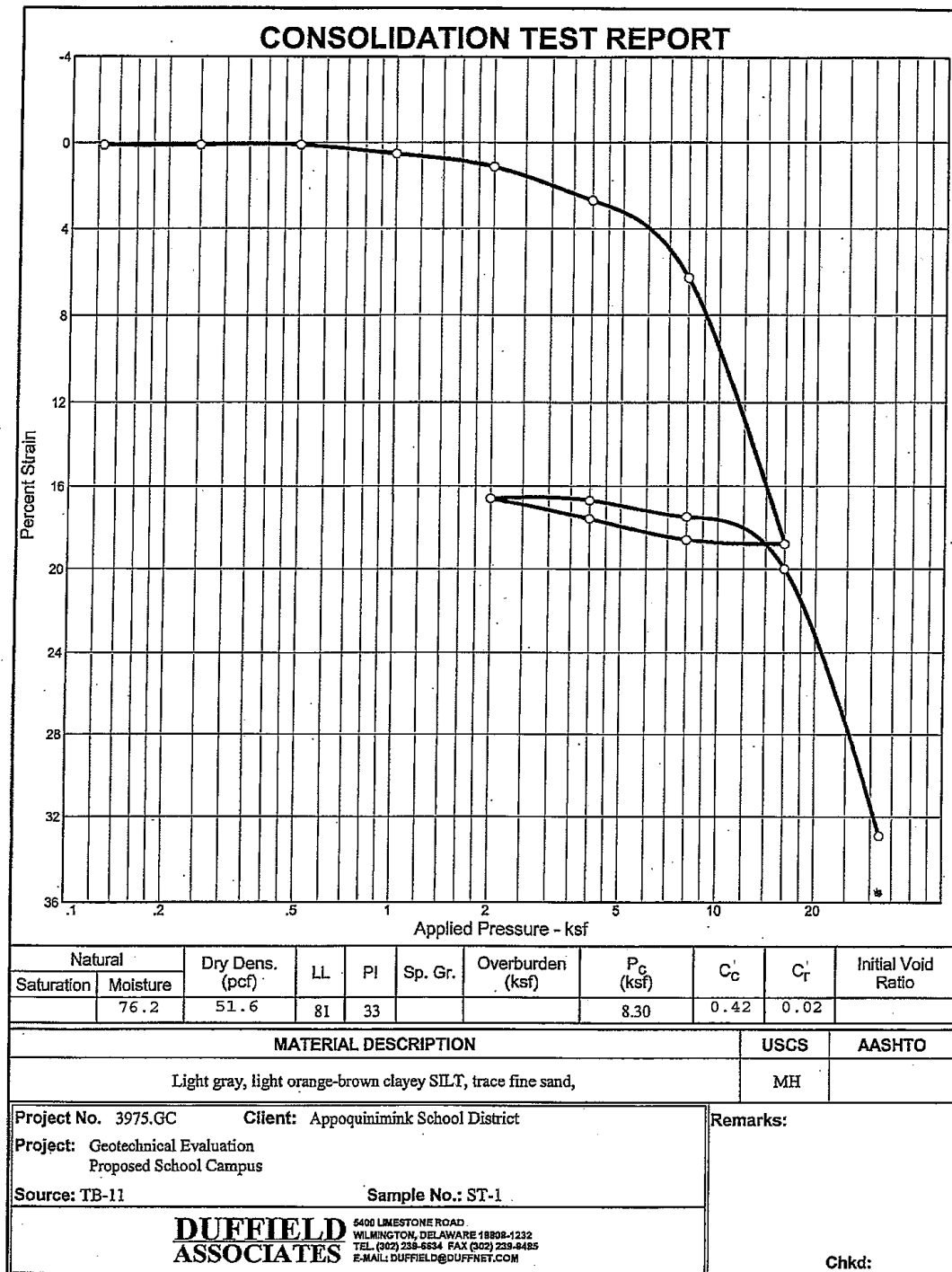
















## GENERAL NOTES

DUFFIELD ASSOCIATES uses the following definitions and terminology to classify and correlate the field and laboratory samples.

**VISUAL UNIFIED CLASSIFICATIONS:** The soil samples are described by color, major constituent, modifiers (by percentage), and density (or consistency). Coarse Grained or Granular Soils have more than 50% of their dry weight retained on a No. 200 sieve; they are described as: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a No. 200 sieve; they are described as: clays or clayey silts if they are cohesive and silts if they are noncohesive. In addition to gradation, granular soils are defined on the basis of their relative in-place density and fine grained soils on the basis of their strength or consistency and their plasticity.

The Unified Soil Classification symbols are:

### COARSE GRAINED SOILS

GW - Well graded gravels  
GP - Poorly graded gravels  
GM - Silty gravels  
GC - Clayey gravels  
SW - Well graded sands  
SP - Poorly graded sands  
SM - Silty sands  
SC - Clayey sands

### SIZE DESCRIPTION

F - Fine  
M - Medium  
C - Coarse  
G - Gravel

### COLOR

Or - Orange  
Yel - Yellow  
Br - Brown

Blk - Black  
Gr - Gray  
R - Red

### FINE GRAINED SOILS

ML - Silts of low plasticity  
CL - Clays of low to medium plasticity  
OL - Organic silt clays of low plasticity  
MH - Silts of high plasticity  
CH - Clays of high plasticity  
OH - Organic silt clays of high plasticity  
PT - Peat and highly organic soils

### MODIFIERS (PERCENTAGE)

Tr - Trace 1 - 10%  
Ltl - Little 11 - 20%  
Some 21 - 35%  
& - And 36 - 50%

### DENSITY: COARSE GRAINED SOILS

Very loose 4 blows/ft or less  
Loose 5 to 10 blows/ft  
Medium 11 to 30 blows/ft  
Dense 31 to 50 blows/ft  
Very Dense 51 blows/ft or more

### CONSISTENCY: FINE GRAINED SOILS

Very soft 2 blows/ft or less  
Soft 3 to 4 blows/ft  
Medium 5 to 8 blows/ft  
Stiff 9 to 15 blows/ft  
Very stiff 16 to 30 blows/ft  
Hard 31 blows/ft or more

NOTE: The Standard Penetration Test "N" value is the number of blows per foot of a 140 pound hammer falling 30 inches on a 2 inch O.D. split spoon sampler, except where otherwise noted.

**Contract: B-02 : Sitework (Campus)**

**BID FORM**

For Bids Due: \_\_\_\_\_ To: **Appoquinimink School District**  
**118 South Sixth Street**  
**Odessa, De 19730**

Name of Bidder: \_\_\_\_\_

Bidder Address: \_\_\_\_\_  
\_\_\_\_\_

Contact Name: \_\_\_\_\_ E-Mail Address: \_\_\_\_\_

Delaware Business License No.: \_\_\_\_\_ Taxpayer ID No.: \_\_\_\_\_

(Other License Nos.): \_\_\_\_\_

**(A copy of Bidder's Delaware Business License must be attached to this form.)**

Phone No.: (       ) \_\_\_\_\_ - \_\_\_\_\_ Fax No.: (       ) \_\_\_\_\_ - \_\_\_\_\_

The undersigned, representing that he has read and understands the Bidding Documents and that this bid is made in accordance therewith, that he has visited the site and has familiarized himself with the local conditions under which the Work is to be performed, and that his bid is based upon the materials, systems and equipment described in the Bidding Documents without exception, hereby proposes and agrees to provide all labor, materials, plant, equipment, supplies, transport and other facilities required to execute the work described by the aforesaid documents for the lump sum itemized below:

\$ \_\_\_\_\_ (\$ \_\_\_\_\_ )

**ALTERNATES**

Alternate prices conform to applicable project specification section. Refer to specifications for a complete description of the following Alternates. An "ADD" or "DEDUCT" amount is indicated by the crossed out part that does not apply.

Alternate No. 1: Provide new Sidewalk within the Green.

Add/Deduct \_\_\_\_\_ ( \$ \_\_\_\_\_ )

Alternate No. 2: Provide Turf Fields at Lacrosse/Field Hockey Fields in lieu of Seed

Add/Deduct \_\_\_\_\_ ( \$ \_\_\_\_\_ )

Alternate No. 4: Provide High School Gymnasium Alternate Size/Layout

Add/Deduct \_\_\_\_\_ ( \$ \_\_\_\_\_ )

UNIT PRICES

Unit prices conform to applicable project specification section. Refer to the specifications for a complete description of the following Unit Prices:

	<u>Add</u>	<u>BULK</u> <u>Deduct</u>	<u>TRENCH</u> <u>Add</u>	<u>Deduct</u>
1. Price per Cubic Yard for earth excavation as specified In excavation section	_____ c/y	_____ c/y	_____ c/y	_____ c/y
2. Price per cubic yard for earth excavation.	_____ c/y	_____ c/y	_____ c/y	_____ c/y
3. Price per Square Yard for Light Duty Sidewalk Incl excavation, grading, prep, pour & finish	_____ s/y	_____ s/y	_____ s/y	_____ s/y
4. Price per Square Yard for Heavy Duty Sidewalk Incl excavation, grading, prep, pour & finish	_____ s/y	_____ s/y	_____ s/y	_____ s/y
5. Price per Linear Foot for Concrete Curbing Incl excavation, grading, prep, pour & finish	_____ l/f	_____ l/f	_____ l/f	_____ l/f
6. Price per Cubic Yard to supply & install Bio-Media Mix	_____ c/y	_____ c/y	_____ c/y	_____ c/y
11. Price per cubic yard for excavation and backfill With select material	_____ c/y	_____ c/y	_____ c/y	_____ c/y
12. Price per cubic yard to undercut building subgrade and backfill with structural fill material. Spoils to be placed on site.	_____ c/y	_____ c/y	_____ c/y	_____ c/y

NOTE: The difference in price between Add and Deduct in the above Unit Prices should not exceed fifteen percent (15%).

I/We acknowledge Addendums numbered \_\_\_\_\_ and the price(s) submitted include any cost/schedule impact they may have.

This bid shall remain valid and cannot be withdrawn for sixty (90) days from the date of opening of bids, and the undersigned shall abide by the Bid Security forfeiture provisions. Bid Security is attached to this Bid (if required).

The Owner shall have the right to reject any or all bids, and to waive any informality or irregularity in any bid received.

This bid is based upon work being accomplished by the Sub-Contractors named on the list attached to this bid.

The undersigned represents and warrants that he has complied and shall comply with all requirements of local, state, and national laws; that no legal requirement has been or shall be violated in making or accepting this bid, in awarding the contract to him or in the prosecution of the work required; that the bid is legal and firm; that he has not, directly or

BID FORM AND ATTACHMENTS

004100-2

PU09, Revised 2-2017

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indirectly, entered into any agreement, participated in any collusion, or otherwise taken action in restraint of free competitive bidding.

Upon receipt of written notice of the acceptance of this Bid, the Bidder shall, within twenty (20) calendar days, execute the agreement in the required form and deliver the Contract Bonds, and Insurance Certificates, required by the Contract Documents.

I am / We are an Individual / a Partnership / a Corporation

By \_\_\_\_\_ Trading as \_\_\_\_\_  
(Individual's / General Partner's / Corporate Name)  
\_\_\_\_\_  
(State of Corporation)

Business Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Witness: \_\_\_\_\_ By: \_\_\_\_\_  
(SEAL) ( Authorized Signature )  
\_\_\_\_\_  
( Title )  
Date: \_\_\_\_\_

ATTACHMENTS

Sub-Contractor List  
Non-Collusion Statement  
Bid Bond  
Consent of Surety  
Affidavit of Employee Drug Testing Program (1 per contractor/subcontractor)  
Delaware Business License  
New Castle County Business License  
(Others as Required by Project Manuals)

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SUBCONTRACTOR LIST

In accordance with Title 29, Chapter 6962 (d)(10)b Delaware Code, the following sub-contractor listing must accompany the bid submittal. The name and address of the sub-contractor must be listed for each category where the bidder intends to use a sub-contractor to perform that category of work. In order to provide full disclosure and acceptance of the bid by the Owner, **it is required that bidders list themselves as being the sub-contractor for all categories where he/she is qualified and intends to perform such work.**

<u>Subcontractor</u> <u>Category</u>	<u>Subcontractor</u>	<u>Address (City &amp; State)</u>	<u><b>Subcontractors tax payer ID # or Delaware Business license #</b></u>
1. Sitework	_____	_____	_____
2. Paving	_____	_____	_____

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NON-COLLUSION STATEMENT

This is to certify that the undersigned bidder has neither directly nor indirectly, entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free competitive bidding in connection with this proposal submitted this date

All the terms and conditions of *Contract B-02 Sitework* have been thoroughly examined and are understood.

NAME OF BIDDER: \_\_\_\_\_

AUTHORIZED REPRESENTATIVE  
(TYPED): \_\_\_\_\_

AUTHORIZED REPRESENTATIVE  
(SIGNATURE): \_\_\_\_\_

TITLE: \_\_\_\_\_

ADDRESS OF BIDDER: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

PHONE NUMBER: \_\_\_\_\_

Sworn to and Subscribed before me this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_.

My Commission expires \_\_\_\_\_. NOTARY PUBLIC \_\_\_\_\_.

THIS PAGE MUST BE SIGNED AND NOTARIZED FOR YOUR BID TO BE CONSIDERED.

**BID BOND**

TO ACCOMPANY PROPOSAL  
(Not necessary if security is used)

KNOW ALL MEN BY THESE PRESENTS That: \_\_\_\_\_ of  
\_\_\_\_\_ in the County of \_\_\_\_\_ and State of \_\_\_\_\_ as  
Principal, and \_\_\_\_\_ of \_\_\_\_\_ in the County of \_\_\_\_\_  
\_\_\_\_\_ and State of \_\_\_\_\_ as Surety, legally authorized to do business in the State of Delaware  
("State"), are held and firmly unto the **Appoquinimink School District** in the sum of \_\_\_\_\_  
Dollars (\$ \_\_\_\_\_), or percent not to exceed \_\_\_\_\_  
\_\_\_\_\_ Dollars (\$ \_\_\_\_\_) of amount of bid on Contract No. \_\_\_\_\_ to be paid to the  
**Appoquinimink School District** for the use and benefit of the **Appoquinimink School District** for which payment well  
and truly to be made, we do bind ourselves, our and each of our heirs, executors, administrators, and successors, jointly  
and severally for and in the whole firmly by these presents.

NOW THE CONDITION OF THIS OBLIGATION IS SUCH That if the above bounden Principal who has submitted to the  
**Appoquinimink School District** a certain proposal to enter into this contract for the furnishing of certain material and/or  
services within the State, shall be awarded this Contract, and if said Principal shall well and truly enter into and execute  
this Contract as may be required by the terms of this Contract and approved by **Appoquinimink School District** this  
Contract to be entered into within twenty days after the date of official notice of the award thereof in accordance with the  
terms of said proposal, then this obligation shall be void or else to be and remain in full force and virtue.

Sealed with \_\_\_\_\_ seal and dated this \_\_\_\_\_ day of \_\_\_\_\_ in the year of our Lord two thousand  
and \_\_\_\_\_ (20\_\_).

SEALED, AND DELIVERED IN THE PRESENCE OF

\_\_\_\_\_  
Name of Bidder (Organization)

Corporate  
Seal  
Attest \_\_\_\_\_

By: \_\_\_\_\_  
Authorized Signature

\_\_\_\_\_  
Title

\_\_\_\_\_  
Name of Surety

Witness \_\_\_\_\_

\_\_\_\_\_  
Title

---

CONSENT OF SURETY

DATE \_\_\_\_\_

To: **Appoquinimink School District**  
118 South Sixth Street  
Odessa, De 19730

Gentlemen:

We, the \_\_\_\_\_

---

(Surety Company's Address)

---

a Surety Company authorized to do business in the State of Delaware hereby agrees that if

---

(Contractor)

---

---

(Address)

---

is awarded the Contract No. \_\_\_\_\_

We will write the required Performance and/or Labor and Material Bond required by Paragraph 9 of the Instructions to Bidders.

---

(Surety Company)

By \_\_\_\_\_

(Attorney-in-Fact)



---

**AFFIDAVIT**  
**OF**  
**EMPLOYEE DRUG TESTING PROGRAM**

4104 Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on Large Public Works Projects requires that Contractors and Subcontractors implement a program of mandatory drug testing for Employees who work on Large Public Works Contracts funded all or in part with public funds.

We hereby certify that we have in place or will implement during the entire term of the contract a Mandatory Drug Testing Program for our employees on the jobsite that complies with this regulation:

Contractor/Subcontractor Name: \_\_\_\_\_

Contractor/Subcontractor Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Authorized Representative (typed or printed): \_\_\_\_\_

Authorized Representative (signature): \_\_\_\_\_

Title: \_\_\_\_\_

Sworn to and Subscribed before me this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_.

My Commission expires \_\_\_\_\_. NOTARY PUBLIC \_\_\_\_\_.

**THIS PAGE MUST BE SIGNED AND NOTARIZED FOR YOUR BID TO BE CONSIDERED.**

**Contract: B-03 : Driven Timber Piles (Campus)**

**BID FORM**

For Bids Due: \_\_\_\_\_ To: **Appoquinimink School District**  
**118 South Sixth Street**  
**Odessa, De 19730**

Name of Bidder: \_\_\_\_\_

Bidder Address: \_\_\_\_\_  
\_\_\_\_\_

Contact Name: \_\_\_\_\_ E-Mail Address: \_\_\_\_\_

Delaware Business License No.: \_\_\_\_\_ Taxpayer ID No.: \_\_\_\_\_

(Other License Nos.): \_\_\_\_\_

**(A copy of Bidder's Delaware Business License must be attached to this form.)**

Phone No.: (        ) \_\_\_\_\_ - \_\_\_\_\_ Fax No.: (        ) \_\_\_\_\_ - \_\_\_\_\_

The undersigned, representing that he has read and understands the Bidding Documents and that this bid is made in accordance therewith, that he has visited the site and has familiarized himself with the local conditions under which the Work is to be performed, and that his bid is based upon the materials, systems and equipment described in the Bidding Documents without exception, hereby proposes and agrees to provide all labor, materials, plant, equipment, supplies, transport and other facilities required to execute the work described by the aforesaid documents for the lump sum itemized below:

\$ \_\_\_\_\_ (\$ \_\_\_\_\_ )

**ALTERNATES**

Alternate prices conform to applicable project specification section. Refer to specifications for a complete description of the following Alternates. An "ADD" or "DEDUCT" amount is indicated by the crossed out part that does not apply.

Alternate No. 3: Provide a second rig, operator, and crew to install timber driven piles.

Add/Deduct \_\_\_\_\_ ( \$ \_\_\_\_\_ )

Alternate No. 4: Provide High School Gymnasium Alternate Size/Layout

Add/Deduct \_\_\_\_\_ ( \$ \_\_\_\_\_ )

UNIT PRICES

Unit prices conform to applicable project specification section. Refer to the specifications for a complete description of the following Unit Prices:

	<u>BULK</u>		<u>TRENCH</u>	
	<u>Add</u>	<u>Deduct</u>	<u>Add</u>	<u>Deduct</u>
16. Price to add one additional timber pile. Assume 35 l.f. length	_____ c/y	_____ c/y	_____ c/y	_____ c/y
17. Price for each additional linear foot Of driven timber pile.	_____ c/y	_____ c/y	_____ c/y	_____ c/y

NOTE: The difference in price between Add and Deduct in the above Unit Prices should not exceed fifteen percent (15%).

I/We acknowledge Addendums numbered \_\_\_\_\_ and the price(s) submitted include any cost/schedule impact they may have.

This bid shall remain valid and cannot be withdrawn for sixty (90) days from the date of opening of bids, and the undersigned shall abide by the Bid Security forfeiture provisions. Bid Security is attached to this Bid (if required).

The Owner shall have the right to reject any or all bids, and to waive any informality or irregularity in any bid received.

This bid is based upon work being accomplished by the Sub-Contractors named on the list attached to this bid.

The undersigned represents and warrants that he has complied and shall comply with all requirements of local, state, and national laws; that no legal requirement has been or shall be violated in making or accepting this bid, in awarding the contract to him or in the prosecution of the work required; that the bid is legal and firm; that he has not, directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken action in restraint of free competitive bidding.

Upon receipt of written notice of the acceptance of this Bid, the Bidder shall, within twenty (20) calendar days, execute the agreement in the required form and deliver the Contract Bonds, and Insurance Certificates, required by the Contract Documents.

---

I am / We are an Individual / a Partnership / a Corporation

By \_\_\_\_\_ Trading as \_\_\_\_\_  
(Individual's / General Partner's / Corporate Name)  
\_\_\_\_\_  
(State of Corporation)

Business Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Witness: \_\_\_\_\_ By: \_\_\_\_\_  
(SEAL) ( Authorized Signature )  
\_\_\_\_\_  
( Title )  
Date: \_\_\_\_\_

ATTACHMENTS

Sub-Contractor List  
Non-Collusion Statement  
Bid Bond  
Consent of Surety  
Affidavit of Employee Drug Testing Program (1 per contractor/subcontractor)  
Delaware Business License  
New Castle County Business License  
(Others as Required by Project Manuals)

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SUBCONTRACTOR LIST

In accordance with Title 29, Chapter 6962 (d)(10)b Delaware Code, the following sub-contractor listing must accompany the bid submittal. The name and address of the sub-contractor must be listed for each category where the bidder intends to use a sub-contractor to perform that category of work. In order to provide full disclosure and acceptance of the bid by the Owner, **it is required that bidders list themselves as being the sub-contractor for all categories where he/she is qualified and intends to perform such work.**

Subcontractor

Category

Subcontractor

Address (City & State)

**Subcontractors tax payer ID #**  
**or Delaware Business license #**

1. Timber Piles

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

---

NON-COLLUSION STATEMENT

This is to certify that the undersigned bidder has neither directly nor indirectly, entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free competitive bidding in connection with this proposal submitted this date

All the terms and conditions of *Contract B-03 Driven Timber Piles* have been thoroughly examined and are understood.

NAME OF BIDDER: \_\_\_\_\_

AUTHORIZED REPRESENTATIVE  
(TYPED): \_\_\_\_\_

AUTHORIZED REPRESENTATIVE  
(SIGNATURE): \_\_\_\_\_

TITLE: \_\_\_\_\_

ADDRESS OF BIDDER: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

PHONE NUMBER: \_\_\_\_\_

Sworn to and Subscribed before me this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_.

My Commission expires \_\_\_\_\_. NOTARY PUBLIC \_\_\_\_\_.

THIS PAGE MUST BE SIGNED AND NOTARIZED FOR YOUR BID TO BE CONSIDERED.

**BID BOND**

TO ACCOMPANY PROPOSAL  
(Not necessary if security is used)

KNOW ALL MEN BY THESE PRESENTS That: \_\_\_\_\_ of  
\_\_\_\_\_ in the County of \_\_\_\_\_ and State of \_\_\_\_\_ as  
Principal, and \_\_\_\_\_ of \_\_\_\_\_ in the County of \_\_\_\_\_  
\_\_\_\_\_ and State of \_\_\_\_\_ as Surety, legally authorized to do business in the State of Delaware  
("State"), are held and firmly unto the **Appoquinimink School District** in the sum of \_\_\_\_\_  
Dollars (\$ \_\_\_\_\_), or percent not to exceed \_\_\_\_\_  
\_\_\_\_\_ Dollars (\$ \_\_\_\_\_) of amount of bid on Contract No. \_\_\_\_\_ to be paid to the  
**Appoquinimink School District** for the use and benefit of the **Appoquinimink School District** for which payment well  
and truly to be made, we do bind ourselves, our and each of our heirs, executors, administrators, and successors, jointly  
and severally for and in the whole firmly by these presents.

NOW THE CONDITION OF THIS OBLIGATION IS SUCH That if the above bounden Principal who has submitted to the  
**Appoquinimink School District** a certain proposal to enter into this contract for the furnishing of certain material and/or  
services within the State, shall be awarded this Contract, and if said Principal shall well and truly enter into and execute  
this Contract as may be required by the terms of this Contract and approved by **Appoquinimink School District** this  
Contract to be entered into within twenty days after the date of official notice of the award thereof in accordance with the  
terms of said proposal, then this obligation shall be void or else to be and remain in full force and virtue.

Sealed with \_\_\_\_\_ seal and dated this \_\_\_\_\_ day of \_\_\_\_\_ in the year of our Lord two thousand  
and \_\_\_\_\_ (20\_\_).

SEALED, AND DELIVERED IN THE PRESENCE OF

\_\_\_\_\_  
Name of Bidder (Organization)

Corporate Seal	By: _____ Authorized Signature
Attest _____	_____ Title
Witness _____	_____ Name of Surety
	_____ Title

---

CONSENT OF SURETY

DATE \_\_\_\_\_

To: **Appoquinimink School District**  
118 South Sixth Street  
Odessa, De 19730

Gentlemen:

We, the \_\_\_\_\_

---

(Surety Company's Address)

---

a Surety Company authorized to do business in the State of Delaware hereby agrees that if

---

(Contractor)

---

---

(Address)

---

is awarded the Contract No. \_\_\_\_\_

We will write the required Performance and/or Labor and Material Bond required by Paragraph 9 of the Instructions to Bidders.

---

(Surety Company)

By \_\_\_\_\_

(Attorney-in-Fact)



---

**AFFIDAVIT**  
**OF**  
**EMPLOYEE DRUG TESTING PROGRAM**

4104 Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on Large Public Works Projects requires that Contractors and Subcontractors implement a program of mandatory drug testing for Employees who work on Large Public Works Contracts funded all or in part with public funds.

We hereby certify that we have in place or will implement during the entire term of the contract a Mandatory Drug Testing Program for our employees on the jobsite that complies with this regulation:

Contractor/Subcontractor Name: \_\_\_\_\_

Contractor/Subcontractor Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Authorized Representative (typed or printed): \_\_\_\_\_

Authorized Representative (signature): \_\_\_\_\_

Title: \_\_\_\_\_

Sworn to and Subscribed before me this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_.

My Commission expires \_\_\_\_\_. NOTARY PUBLIC \_\_\_\_\_.

**THIS PAGE MUST BE SIGNED AND NOTARIZED FOR YOUR BID TO BE CONSIDERED.**

**Contract: B-04 : Foundation Concrete & Waterproofing (Campus)**

**BID FORM**

For Bids Due: \_\_\_\_\_

To: **Appoquinimink School District**  
**118 South Sixth Street**  
**Odessa, De 19730**

Name of Bidder: \_\_\_\_\_

Bidder Address: \_\_\_\_\_

Contact Name: \_\_\_\_\_ E-Mail Address: \_\_\_\_\_

Delaware Business License No.: \_\_\_\_\_ Taxpayer ID No.: \_\_\_\_\_

(Other License Nos.): \_\_\_\_\_

**(A copy of Bidder's Delaware Business License must be attached to this form.)**

Phone No.: (       ) \_\_\_\_\_ - \_\_\_\_\_ Fax No.: (       ) \_\_\_\_\_ - \_\_\_\_\_

The undersigned, representing that he has read and understands the Bidding Documents and that this bid is made in accordance therewith, that he has visited the site and has familiarized himself with the local conditions under which the Work is to be performed, and that his bid is based upon the materials, systems and equipment described in the Bidding Documents without exception, hereby proposes and agrees to provide all labor, materials, plant, equipment, supplies, transport and other facilities required to execute the work described by the aforesaid documents for the lump sum itemized below:

\$ \_\_\_\_\_ (\$ \_\_\_\_\_ )

**ALTERNATES**

Alternate prices conform to applicable project specification section. Refer to specifications for a complete description of the following Alternates. An "ADD" or "DEDUCT" amount is indicated by the crossed out part that does not apply.

Alternate No. 4: Provide High School Gymnasium Alternate Size/Layout

Add/Deduct \_\_\_\_\_ ( \$ \_\_\_\_\_ )

# UNIT PRICES

Unit prices conform to applicable project specification section. Refer to the specifications for a complete description of the following Unit Prices:

	<u>BULK</u>		<u>TRENCH</u>	
	<u>Add</u>	<u>Deduct</u>	<u>Add</u>	<u>Deduct</u>
1. Price per Cubic Yard for earth excavation as specified In excavation section	_____ c/y	_____ c/y	_____ c/y	_____ c/y
2. Price per cubic yard for earth excavation.	_____ c/y	_____ c/y	_____ c/y	_____ c/y
7. Additional mass concrete in footings	_____ c/y	_____ c/y	_____ c/y	_____ c/y
8. Price per cubic yard for concrete in foundation walls (including forms and reinforcement)	_____ c/y	_____ c/y	_____ c/y	_____ c/y
9. Price per cubic yard for reinforced concrete on grade.	_____ c/y	_____ c/y	_____ c/y	_____ c/y
11. Price per cubic yard for excavation and backfill With select material	_____ c/y	_____ c/y	_____ c/y	_____ c/y
12. Price per cubic yard to undercut building subgrade and backfill with structural fill material. Spoils to be placed on site.	_____ c/y	_____ c/y	_____ c/y	_____ c/y
13. Price per cubic yard to undercut footings subgrade and backfill with on-site mined structural fill. Spoils to be placed on site.	_____ c/y	_____ c/y	_____ c/y	_____ c/y
14. Price per cubic yard to undercut footings subgrade and backfill with select spoils to be placed on site	_____ c/y	_____ c/y	_____ c/y	_____ c/y
15. Price per cubic yard to undercut footing subgrade and backfill with 106A stone. Spoils to be placed on site.	_____ c/y	_____ c/y	_____ c/y	_____ c/y

NOTE: The difference in price between Add and Deduct in the above Unit Prices should not exceed fifteen percent (15%).

I/We acknowledge Addendums numbered \_\_\_\_\_ and the price(s) submitted include any cost/schedule impact they may have.

This bid shall remain valid and cannot be withdrawn for sixty (90) days from the date of opening of bids, and the undersigned shall abide by the Bid Security forfeiture provisions. Bid Security is attached to this Bid (if required).

The Owner shall have the right to reject any or all bids, and to waive any informality or irregularity in any bid received.

This bid is based upon work being accomplished by the Sub-Contractors named on the list attached to this bid.

The undersigned represents and warrants that he has complied and shall comply with all requirements of local, state, and national laws; that no legal requirement has been or shall be violated in making or accepting this bid, in awarding the

contract to him or in the prosecution of the work required; that the bid is legal and firm; that he has not, directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken action in restraint of free competitive bidding.

Upon receipt of written notice of the acceptance of this Bid, the Bidder shall, within twenty (20) calendar days, execute the agreement in the required form and deliver the Contract Bonds, and Insurance Certificates, required by the Contract Documents.

I am / We are an Individual / a Partnership / a Corporation

By \_\_\_\_\_ Trading as \_\_\_\_\_  
(Individual's / General Partner's / Corporate Name)  
\_\_\_\_\_  
(State of Corporation)

Business Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Witness: \_\_\_\_\_ By: \_\_\_\_\_  
(SEAL) ( Authorized Signature )  
\_\_\_\_\_  
( Title )  
Date: \_\_\_\_\_

ATTACHMENTS

Sub-Contractor List  
Non-Collusion Statement  
Bid Bond  
Consent of Surety  
Affidavit of Employee Drug Testing Program (1 per contractor/subcontractor)  
Delaware Business License  
New Castle County Business License  
(Others as Required by Project Manuals)

---

SUBCONTRACTOR LIST

In accordance with Title 29, Chapter 6962 (d)(10)b Delaware Code, the following sub-contractor listing must accompany the bid submittal. The name and address of the sub-contractor must be listed for each category where the bidder intends to use a sub-contractor to perform that category of work. In order to provide full disclosure and acceptance of the bid by the Owner, **it is required that bidders list themselves as being the sub-contractor for all categories where he/she is qualified and intends to perform such work.**

<u>Subcontractor</u> <u>Category</u>	<u>Subcontractor</u>	<u>Address (City &amp; State)</u>	<u><b>Subcontractors tax payer ID # or Delaware Business license #</b></u>
1. Concrete	_____	_____	_____
2. Excavation/Backfill	_____	_____	_____
3. Waterproofing	_____	_____	_____

---

NON-COLLUSION STATEMENT

This is to certify that the undersigned bidder has neither directly nor indirectly, entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free competitive bidding in connection with this proposal submitted this date

All the terms and conditions of ***Contract B-04 Concrete*** have been thoroughly examined and are understood.

NAME OF BIDDER: \_\_\_\_\_

AUTHORIZED REPRESENTATIVE  
(TYPED): \_\_\_\_\_

AUTHORIZED REPRESENTATIVE  
(SIGNATURE): \_\_\_\_\_

TITLE: \_\_\_\_\_

ADDRESS OF BIDDER: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

PHONE NUMBER: \_\_\_\_\_

Sworn to and Subscribed before me this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_.

My Commission expires \_\_\_\_\_. NOTARY PUBLIC \_\_\_\_\_.

THIS PAGE MUST BE SIGNED AND NOTARIZED FOR YOUR BID TO BE CONSIDERED.

**BID BOND**

TO ACCOMPANY PROPOSAL  
(Not necessary if security is used)

KNOW ALL MEN BY THESE PRESENTS That: \_\_\_\_\_ of  
\_\_\_\_\_ in the County of \_\_\_\_\_ and State of \_\_\_\_\_ as  
Principal, and \_\_\_\_\_ of \_\_\_\_\_ in the County of \_\_\_\_\_  
\_\_\_\_\_ and State of \_\_\_\_\_ as Surety, legally authorized to do business in the State of Delaware  
("State"), are held and firmly unto the **Appoquinimink School District** in the sum of \_\_\_\_\_  
Dollars (\$\_\_\_\_\_), or percent not to exceed \_\_\_\_\_  
\_\_\_\_\_ Dollars (\$\_\_\_\_\_) of amount of bid on Contract No. \_\_\_\_\_ to be paid to the  
**Appoquinimink School District** for the use and benefit of the **Appoquinimink School District** for which payment well  
and truly to be made, we do bind ourselves, our and each of our heirs, executors, administrators, and successors, jointly  
and severally for and in the whole firmly by these presents.

NOW THE CONDITION OF THIS OBLIGATION IS SUCH That if the above bounden Principal who has submitted to the  
**Appoquinimink School District** a certain proposal to enter into this contract for the furnishing of certain material and/or  
services within the State, shall be awarded this Contract, and if said Principal shall well and truly enter into and execute  
this Contract as may be required by the terms of this Contract and approved by **Appoquinimink School District** this  
Contract to be entered into within twenty days after the date of official notice of the award thereof in accordance with the  
terms of said proposal, then this obligation shall be void or else to be and remain in full force and virtue.

Sealed with \_\_\_\_\_ seal and dated this \_\_\_\_ day of \_\_\_\_\_ in the year of our Lord two thousand  
and \_\_\_\_\_ (20\_\_).

SEALED, AND DELIVERED IN THE PRESENCE OF

\_\_\_\_\_  
Name of Bidder (Organization)

Corporate  
Seal  
Attest \_\_\_\_\_

By: \_\_\_\_\_  
Authorized Signature

\_\_\_\_\_  
Title

\_\_\_\_\_  
Name of Surety

Witness \_\_\_\_\_

\_\_\_\_\_  
Title

---

CONSENT OF SURETY

DATE \_\_\_\_\_

To: **Appoquinimink School District**  
118 South Sixth Street  
Odessa, De 19730

Gentlemen:

We, the \_\_\_\_\_

---

(Surety Company's Address)

---

a Surety Company authorized to do business in the State of Delaware hereby agrees that if

---

(Contractor)

---

---

(Address)

---

is awarded the Contract No. \_\_\_\_\_

We will write the required Performance and/or Labor and Material Bond required by Paragraph 9 of the Instructions to Bidders.

---

(Surety Company)

By \_\_\_\_\_  
(Attorney-in-Fact)



---

**AFFIDAVIT**  
**OF**  
**EMPLOYEE DRUG TESTING PROGRAM**

4104 Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on Large Public Works Projects requires that Contractors and Subcontractors implement a program of mandatory drug testing for Employees who work on Large Public Works Contracts funded all or in part with public funds.

We hereby certify that we have in place or will implement during the entire term of the contract a Mandatory Drug Testing Program for our employees on the jobsite that complies with this regulation:

Contractor/Subcontractor Name: \_\_\_\_\_

Contractor/Subcontractor Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Authorized Representative (typed or printed): \_\_\_\_\_

Authorized Representative (signature): \_\_\_\_\_

Title: \_\_\_\_\_

Sworn to and Subscribed before me this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_\_.

My Commission expires \_\_\_\_\_. NOTARY PUBLIC \_\_\_\_\_.

**THIS PAGE MUST BE SIGNED AND NOTARIZED FOR YOUR BID TO BE CONSIDERED.**

**Contract: B-05 : Foundation Masonry & Dampproofing (Campus)**

**BID FORM**

For Bids Due: \_\_\_\_\_

To: **Appoquinimink School District**  
**118 South Sixth Street**  
**Odessa, De 19730**

Name of Bidder: \_\_\_\_\_

Bidder Address: \_\_\_\_\_

Contact Name: \_\_\_\_\_ E-Mail Address: \_\_\_\_\_

Delaware Business License No.: \_\_\_\_\_ Taxpayer ID No.: \_\_\_\_\_

(Other License Nos.): \_\_\_\_\_

**(A copy of Bidder's Delaware Business License must be attached to this form.)**

Phone No.: (        ) \_\_\_\_\_ - \_\_\_\_\_ Fax No.: (        ) \_\_\_\_\_ - \_\_\_\_\_

The undersigned, representing that he has read and understands the Bidding Documents and that this bid is made in accordance therewith, that he has visited the site and has familiarized himself with the local conditions under which the Work is to be performed, and that his bid is based upon the materials, systems and equipment described in the Bidding Documents without exception, hereby proposes and agrees to provide all labor, materials, plant, equipment, supplies, transport and other facilities required to execute the work described by the aforesaid documents for the lump sum itemized below:

\$ \_\_\_\_\_ (\$ \_\_\_\_\_ )

**ALTERNATES**

Alternate prices conform to applicable project specification section. Refer to specifications for a complete description of the following Alternates. An "ADD" or "DEDUCT" amount is indicated by the crossed out part that does not apply.

Alternate No. 4: Provide High School Gymnasium Alternate Size/Layout

Add/Deduct \_\_\_\_\_ ( \$ \_\_\_\_\_ )

---

UNIT PRICES

Unit prices conform to applicable project specification section. Refer to the specifications for a complete description of the following Unit Prices:

<u>BULK</u>		<u>TRENCH</u>	
<u>Add</u>	<u>Deduct</u>	<u>Add</u>	<u>Deduct</u>

NOTE: The difference in price between Add and Deduct in the above Unit Prices should not exceed fifteen percent (15%).

I/We acknowledge Addendums numbered \_\_\_\_\_ and the price(s) submitted include any cost/schedule impact they may have.

This bid shall remain valid and cannot be withdrawn for sixty (90) days from the date of opening of bids, and the undersigned shall abide by the Bid Security forfeiture provisions. Bid Security is attached to this Bid (if required).

The Owner shall have the right to reject any or all bids, and to waive any informality or irregularity in any bid received.

This bid is based upon work being accomplished by the Sub-Contractors named on the list attached to this bid.

The undersigned represents and warrants that he has complied and shall comply with all requirements of local, state, and national laws; that no legal requirement has been or shall be violated in making or accepting this bid, in awarding the contract to him or in the prosecution of the work required; that the bid is legal and firm; that he has not, directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken action in restraint of free competitive bidding.

Upon receipt of written notice of the acceptance of this Bid, the Bidder shall, within twenty (20) calendar days, execute the agreement in the required form and deliver the Contract Bonds, and Insurance Certificates, required by the Contract Documents.

I am / We are an Individual / a Partnership / a Corporation

By \_\_\_\_\_ Trading as \_\_\_\_\_  
(Individual's / General Partner's / Corporate Name)  
\_\_\_\_\_  
(State of Corporation)

Business Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Witness: \_\_\_\_\_ By: \_\_\_\_\_  
(SEAL) ( Authorized Signature )  
\_\_\_\_\_  
( Title )  
Date: \_\_\_\_\_

ATTACHMENTS

Sub-Contractor List  
Non-Collusion Statement  
Bid Bond  
Consent of Surety  
Affidavit of Employee Drug Testing Program (1 per contractor/subcontractor)  
Delaware Business License  
New Castle County Business License  
(Others as Required by Project Manuals)

---

SUBCONTRACTOR LIST

In accordance with Title 29, Chapter 6962 (d)(10)b Delaware Code, the following sub-contractor listing must accompany the bid submittal. The name and address of the sub-contractor must be listed for each category where the bidder intends to use a sub-contractor to perform that category of work. In order to provide full disclosure and acceptance of the bid by the Owner, **it is required that bidders list themselves as being the sub-contractor for all categories where he/she is qualified and intends to perform such work.**

<u>Subcontractor</u> <u>Category</u>	<u>Subcontractor</u>	<u>Address (City &amp; State)</u>	<u>Subcontractors tax payer ID #</u> <u>or Delaware Business license #</u>
1. Masonry	_____	_____	_____
2. Dampproofing	_____	_____	_____

---

NON-COLLUSION STATEMENT

This is to certify that the undersigned bidder has neither directly nor indirectly, entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free competitive bidding in connection with this proposal submitted this date

All the terms and conditions of *Contract B-05 Foundation Masonry & Waterproofing* have been thoroughly examined and are understood.

NAME OF BIDDER: \_\_\_\_\_

AUTHORIZED REPRESENTATIVE  
(TYPED): \_\_\_\_\_

AUTHORIZED REPRESENTATIVE  
(SIGNATURE): \_\_\_\_\_

TITLE: \_\_\_\_\_

ADDRESS OF BIDDER: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

PHONE NUMBER: \_\_\_\_\_

Sworn to and Subscribed before me this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_.

My Commission expires \_\_\_\_\_. NOTARY PUBLIC \_\_\_\_\_.

THIS PAGE MUST BE SIGNED AND NOTARIZED FOR YOUR BID TO BE CONSIDERED.

**BID BOND**

TO ACCOMPANY PROPOSAL  
(Not necessary if security is used)

KNOW ALL MEN BY THESE PRESENTS That: \_\_\_\_\_ of  
\_\_\_\_\_ in the County of \_\_\_\_\_ and State of \_\_\_\_\_ as  
Principal, and \_\_\_\_\_ of \_\_\_\_\_ in the County of \_\_\_\_\_  
\_\_\_\_\_ and State of \_\_\_\_\_ as Surety, legally authorized to do business in the State of Delaware  
("State"), are held and firmly unto the **Appoquinimink School District** in the sum of \_\_\_\_\_  
Dollars (\$\_\_\_\_\_), or percent not to exceed \_\_\_\_\_  
\_\_\_\_\_ Dollars (\$\_\_\_\_\_) of amount of bid on Contract No. \_\_\_\_\_ to be paid to the  
**Appoquinimink School District** for the use and benefit of the **Appoquinimink School District** for which payment well  
and truly to be made, we do bind ourselves, our and each of our heirs, executors, administrators, and successors, jointly  
and severally for and in the whole firmly by these presents.

NOW THE CONDITION OF THIS OBLIGATION IS SUCH That if the above bounden Principal who has submitted to the  
**Appoquinimink School District** a certain proposal to enter into this contract for the furnishing of certain material and/or  
services within the State, shall be awarded this Contract, and if said Principal shall well and truly enter into and execute  
this Contract as may be required by the terms of this Contract and approved by **Appoquinimink School District** this  
Contract to be entered into within twenty days after the date of official notice of the award thereof in accordance with the  
terms of said proposal, then this obligation shall be void or else to be and remain in full force and virtue.

Sealed with \_\_\_\_\_ seal and dated this \_\_\_\_ day of \_\_\_\_\_ in the year of our Lord two thousand  
and \_\_\_\_\_ (20\_\_).

SEALED, AND DELIVERED IN THE PRESENCE OF

\_\_\_\_\_  
Name of Bidder (Organization)

Corporate  
Seal  
Attest \_\_\_\_\_

By: \_\_\_\_\_  
Authorized Signature

\_\_\_\_\_  
Title

\_\_\_\_\_  
Name of Surety

Witness \_\_\_\_\_

\_\_\_\_\_  
Title

---

CONSENT OF SURETY

DATE \_\_\_\_\_

To: **Appoquinimink School District**  
118 South Sixth Street  
Odessa, De 19730

Gentlemen:

We, the \_\_\_\_\_

---

(Surety Company's Address)

---

a Surety Company authorized to do business in the State of Delaware hereby agrees that if

---

(Contractor)

---

---

(Address)

---

is awarded the Contract No. \_\_\_\_\_

We will write the required Performance and/or Labor and Material Bond required by Paragraph 9 of the Instructions to Bidders.

---

(Surety Company)

By \_\_\_\_\_

(Attorney-in-Fact)



---

**AFFIDAVIT**  
**OF**  
**EMPLOYEE DRUG TESTING PROGRAM**

4104 Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on Large Public Works Projects requires that Contractors and Subcontractors implement a program of mandatory drug testing for Employees who work on Large Public Works Contracts funded all or in part with public funds.

We hereby certify that we have in place or will implement during the entire term of the contract a Mandatory Drug Testing Program for our employees on the jobsite that complies with this regulation:

Contractor/Subcontractor Name: \_\_\_\_\_

Contractor/Subcontractor Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Authorized Representative (typed or printed): \_\_\_\_\_

Authorized Representative (signature): \_\_\_\_\_

Title: \_\_\_\_\_

Sworn to and Subscribed before me this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_\_.

My Commission expires \_\_\_\_\_. NOTARY PUBLIC \_\_\_\_\_.

**THIS PAGE MUST BE SIGNED AND NOTARIZED FOR YOUR BID TO BE CONSIDERED.**

END OF SECTION

---

SECTION 005200 - AGREEMENT

1. SUMMARY

A. The Agreement Form for this Project is the American Institute of Architects Standard Form of Agreement Between Owner and Construction Manager as Constructor where the basis of payment is the Cost of the Work Plus a Fee without a Guarantee Maximum Price A132 – 2009 Edition.

B. A copy of AIA Document [A132 - 2009 Edition] is bound into this Project Manual following this page.

1. Under Article 5.1.4.5 add the following:

“Upon completion of the work under the Contract, the Owner may release 60% of the amount then retained. The balance of the amount retained will be held until:

- a. All reports required of the Contract are received;
- b. All Subcontractors in trades listed on the Bid Form are paid by the Contractor, unless the amount owed to the Subcontractor is disputed, in which case the Owner may withhold 150% of the amount withheld by the Contractor in its dispute with the Subcontractor; and
- c. Final payment is authorized by the Owner.”

END OF SECTION

# DRAFT AIA® Document A132™ – 2009

## Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition

**AGREEMENT** made as of the « » day of « » in the year « »  
(In words, indicate day, month and year.)

**BETWEEN** the Owner:  
(Name, legal status, address and other information)

Appoquinimink School District  
P.O. Box 4010  
Odessa, DE 19730-4010

and the Contractor:  
(Name, legal status, address and other information)

« » « »  
« »  
« »  
« »

for the following Project:  
(Name, location and detailed description)

New High School and New Middle School located at the Fairview Campus  
580 Tony Marchio Drive  
Townsend, DE 19734

The Construction Manager:  
(Name, legal status, address and other information)

EDiS Company  
110 S. Poplar Street  
Suite 400  
Wilmington, DE 19801

The Architect:  
(Name, legal status, address and other information)

ABHA /BSA+A  
1621 N. Lincoln Street  
Wilmington, De 19806

The Owner and Contractor agree as follows.

### ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

This document is intended to be used in conjunction with AIA Documents A232™-2009, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition; B132™-2009, Standard Form of Agreement Between Owner and Architect, Construction Manager as Adviser Edition; and C132™-2009, Standard Form of Agreement Between Owner and Construction Manager as Adviser.

AIA Document A232™-2009 is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

**ELECTRONIC COPYING** of any portion of this AIA® Document to another electronic file is prohibited and constitutes a violation of copyright laws as set forth in the footer of this document.

## TABLE OF ARTICLES

1	THE CONTRACT DOCUMENTS
2	THE WORK OF THIS CONTRACT
3	DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION
4	CONTRACT SUM
5	PAYMENTS
6	DISPUTE RESOLUTION
7	TERMINATION OR SUSPENSION
8	MISCELLANEOUS PROVISIONS
9	ENUMERATION OF CONTRACT DOCUMENTS
10	INSURANCE AND BONDS

## EXHIBIT A DETERMINATION OF THE COST OF THE WORK

### ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. An enumeration of the Contract Documents, other than Modifications, appears in Article 9.

### ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

### ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

**§ 3.1** The date of commencement of the Work shall be the date of this Agreement unless a different date is stated below or provision is made for the date to be fixed in a notice to proceed issued by the Owner.

*(Insert the date of commencement, if it differs from the date of this Agreement or, if applicable, state that the date will be fixed in a notice to proceed.)*

<< >>

If, prior to the commencement of the Work, the Owner requires time to file mortgages, mechanics' liens and other security interests, the Owner's time requirement shall be as follows:

<< >>

**§ 3.2** The Contract Time shall be measured from the date of commencement.

**§ 3.3** The Contractor shall achieve Substantial Completion of the entire Work not later than << >> ( << >> ) days from the date of commencement, or as follows:

*(Insert number of calendar days. Alternatively, a calendar date may be used when coordinated with the date of commencement. If appropriate, insert requirements for earlier Substantial Completion of certain portions of the Work.)*

Per the construction schedule in Specification Section 013126 Construction Schedule.

Portion of the Work

Substantial Completion Date

, subject to adjustments of this Contract Time as provided in the Contract Documents.

*(Insert provisions, if any, for liquidated damages relating to failure to achieve Substantial Completion on time or for bonus payments for early completion of the Work.)*

<< >>

#### ARTICLE 4 CONTRACT SUM

**§ 4.1** The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be one of the following:

*(Check the appropriate box.)*

- ☒ Stipulated Sum, in accordance with Section 4.2 below
- ☐ Cost of the Work plus the Contractor's Fee without a Guaranteed Maximum Price, in accordance with Section 4.3 below
- ☐ Cost of the Work plus the Contractor's Fee with a Guaranteed Maximum Price, in accordance with Section 4.4 below

*(Based on the selection above, complete Section 4.2, 4.3 or 4.4 below. Based on the selection above, also complete either Section 5.1.4, 5.1.5 or 5.1.6 below.)*

#### § 4.2 Stipulated Sum

**§ 4.2.1** The Stipulated Sum shall be << >> (\$ << >> ), subject to additions and deletions as provided in the Contract Documents.

**§ 4.2.2** The Stipulated Sum is based on the following alternates, if any, which are described in the Contract Documents and are hereby accepted by the Owner:

*(State the numbers or other identification of accepted alternates. If the bidding or proposal documents permit the Owner to accept other alternates subsequent to the execution of this Agreement, attach a schedule of such other alternates showing the amount for each and the date when that amount expires.)*

Base Bid	\$
Total Contract Amount	\$

#### § 4.2.3 Unit prices, if any:

*(Identify and state the unit price, and state the quantity limitations, if any, to which the unit price will be applicable.)*

Item	Units and Limitations	Price per Unit (\$0.00)

#### § 4.2.4 Allowances included in the Stipulated Sum, if any:

*(Identify allowance and state exclusions, if any, from the allowance price.)*

Item	Allowance

#### § 4.3 NOT USED - Cost of the Work Plus Contractor's Fee without a Guaranteed Maximum Price

#### § 4.4 NOT USED - Cost of the Work Plus Contractor's Fee with a Guaranteed Maximum Price

## ARTICLE 5 PAYMENTS

### § 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Construction Manager by the Contractor, and upon certification of the Project Application and Project Certificate for Payment or Application for Payment and Certificate for Payment by the Construction Manager and Architect and issuance by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

« »

§ 5.1.3 Provided that an Application for Payment is received by the Construction Manager not later than the 25<sup>th</sup> day of a month, the Owner shall make payment of the certified amount in the Application for Payment to the Contractor not later than the 15<sup>th</sup> day of the second month following the month being billed (e.g. payment submitted 25 Jan 2017 will be paid by 15 March 2017). If an Application for Payment is received by the Construction Manager after the application date fixed above, payment shall be made by the Owner not later than forty-five (45) days after the Construction Manager receives the Application for Payment.

*(Federal, state or local laws may require payment within a certain period of time.)*

### § 5.1.4 Progress Payments Where the Contract Sum is Based on a Stipulated Sum

§ 5.1.4.1 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work and be prepared in such form and supported by such data to substantiate its accuracy as the Construction Manager and Architect may require. This schedule, unless objected to by the Construction Manager or Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.4.2 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.4.3 Subject to the provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

- .1 Take that portion of the Contract Sum properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work by the share of the total Contract Sum allocated to that portion of the Work in the schedule of values, less retainage of « » percent ( « » %). Pending final determination of cost to the Owner of changes in the Work, amounts not in dispute may be included as provided in Section 7.3.9 of the General Conditions;
- .2 Add that portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction (or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing), less retainage of « » percent ( « » %);
- .3 Subtract the aggregate of previous payments made by the Owner; and
- .4 Subtract amounts, if any, for which the Construction Manager or Architect has withheld or nullified a Certificate for Payment as provided in Section 9.5 of the General Conditions.

§ 5.1.4.4 The progress payment amount determined in accordance with Section 5.1.4.3 shall be further modified under the following circumstances:

- .1 Add, upon Substantial Completion of the Work, a sum sufficient to increase the total payments to « » percent ( « » %) of the Contract Sum, less such amounts as the Construction Manager recommends and the Architect determines for incomplete Work and unsettled claims; and
- .2 Add, if final completion of the Work is thereafter materially delayed through no fault of the Contractor, any additional amounts payable in accordance with Section 9.10.3 of the General Conditions.

§ 5.1.4.5 Reduction or limitation of retainage, if any, shall be as follows:

*(If it is intended, prior to Substantial Completion of the entire Work, to reduce or limit the retainage resulting from the percentages inserted in Sections 5.1.4.3.1 and 5.1.4.3.2 above, and this is not explained elsewhere in the Contract Documents, insert here provisions for such reduction or limitation.)*

<< >>

#### **§ 5.1.5 Progress Payments Where the Contract Sum is Based on the Cost of the Work without a Guaranteed Maximum Price**

**§ 5.1.5.1** With each Application for Payment, the Contractor shall submit the cost control information required in Exhibit A, Determination of the Cost of the Work, along with payrolls, petty cash accounts, receipted invoices or invoices with check vouchers attached and any other evidence required by the Owner, Construction Manager or Architect to demonstrate that cash disbursements already made by the Contractor on account of the Cost of the Work equal or exceed (1) progress payments already received by the Contractor; less (2) that portion of those payments attributable to the Contractor's Fee; plus (3) payrolls for the period covered by the present Application for Payment.

**§ 5.1.5.2** Applications for Payment shall show the Cost of the Work actually incurred by the Contractor through the end of the period covered by the Application for Payment and for which the Contractor has made or intends to make actual payment prior to the next Application for Payment.

**§ 5.1.5.3** Subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

- .1 Take the Cost of the Work as described in Exhibit A, Determination of the Cost of the Work;
- .2 Add the Contractor's Fee, less retainage of <> percent (<> %). The Contractor's Fee shall be computed upon the Cost of the Work described in that Section at the rate stated in that Section; or if the Contractor's Fee is stated as a fixed sum, an amount which bears the same ratio to that fixed-sum Fee as the Cost of the Work bears to a reasonable estimate of the probable Cost of the Work upon its completion;
- .3 Subtract retainage of <> percent (<> %) from that portion of the Work that the Contractor self-performs;
- .4 Subtract the aggregate of previous payments made by the Owner;
- .5 Subtract the shortfall, if any, indicated by the Contractor in the documentation required by Article 5 or resulting from errors subsequently discovered by the Owner's auditors in such documentation; and
- .6 Subtract amounts, if any, for which the Construction Manager or Architect has withheld or withdrawn a Certificate for Payment as provided in Section 9.5 of AIA Document A232™-2009, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition.

**§ 5.1.5.4** The Owner, Construction Manager and Contractor shall agree upon (1) a mutually acceptable procedure for review and approval of payments to Subcontractors and (2) the percentage of retainage held on Subcontracts, and the Contractor shall execute subcontracts in accordance with those agreements.

**§ 5.1.5.5** In taking action on the Contractor's Applications for Payment, the Construction Manager and Architect shall be entitled to rely on the accuracy and completeness of the information furnished by the Contractor and shall not be deemed to represent that the Construction Manager and Architect have made a detailed examination, audit or arithmetic verification of the documentation submitted in accordance with Article 5 or other supporting data; that the Construction Manager and Architect have made exhaustive or continuous on-site inspections; or that the Construction Manager and Architect have made examinations to ascertain how or for what purposes the Contractor has used amounts previously paid on account of the Contract. Such examinations, audits and verifications, if required by the Owner, will be performed by the Owner's auditors acting in the sole interest of the Owner.

**§ 5.1.5.6** Except with the Owner's prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

#### **§ 5.1.6 Progress Payments Where the Contract Sum is Based on the Cost of the Work with a Guaranteed Maximum Price**

**§ 5.1.6.1** With each Application for Payment, the Contractor shall submit payrolls, petty cash accounts, receipted invoices or invoices with check vouchers attached, and any other evidence required by the Owner or Architect to demonstrate that cash disbursements already made by the Contractor on account of the Cost of the Work equal or



exceed (1) progress payments already received by the Contractor; less (2) that portion of those payments attributable to the Contractor's Fee; plus (3) payrolls for the period covered by the present Application for Payment.

**§ 5.1.6.2** Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work and be prepared in such form and supported by such data to substantiate its accuracy as the Construction Manager and Architect may require. This schedule, unless objected to by the Construction Manager or Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

**§ 5.1.6.3** Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment. The percentage of completion shall be the lesser of (1) the percentage of that portion of the Work which has actually been completed; or (2) the percentage obtained by dividing (a) the expense that has actually been incurred by the Contractor on account of that portion of the Work for which the Contractor has made or intends to make actual payment prior to the next Application for Payment by (b) the share of the Guaranteed Maximum Price allocated to that portion of the Work in the schedule of values.

**§ 5.1.6.4** Subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

- .1 Take that portion of the Guaranteed Maximum Price properly allocable to completed Work as determined by multiplying the percentage of completion of each portion of the Work by the share of the Guaranteed Maximum Price allocated to that portion of the Work in the schedule of values. Pending final determination of cost to the Owner of changes in the Work, amounts not in dispute shall be included as provided in Section 7.3.10 of AIA Document A232-2009;
- .2 Add that portion of the Guaranteed Maximum Price properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work, or if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing;
- .3 Add the Contractor's Fee, less retainage of « » percent ( « » %). The Contractor's Fee shall be computed upon the Cost of the Work at the rate stated in Section 4.4.2 or, if the Contractor's Fee is stated as a fixed sum in that Section, shall be an amount that bears the same ratio to that fixed-sum fee as the Cost of the Work bears to a reasonable estimate of the probable Cost of the Work upon its completion;
- .4 Subtract retainage of « » percent ( « » %) from that portion of the Work that the Contractor self-performs;
- .5 Subtract the aggregate of previous payments made by the Owner;
- .6 Subtract the shortfall, if any, indicated by the Contractor in the documentation required by Section 5.1.6.1 to substantiate prior Applications for Payment, or resulting from errors subsequently discovered by the Owner's auditors in such documentation; and
- .7 Subtract amounts, if any, for which the Construction Manager or Architect have withheld or nullified a Certificate for Payment as provided in Section 9.5 of AIA Document A232-2009.

**§ 5.1.6.5** The Owner and the Contractor shall agree upon a (1) mutually acceptable procedure for review and approval of payments to Subcontractors and (2) the percentage of retainage held on Subcontracts, and the Contractor shall execute subcontracts in accordance with those agreements.

**§ 5.1.6.6** In taking action on the Contractor's Applications for Payment, the Construction Manager and Architect shall be entitled to rely on the accuracy and completeness of the information furnished by the Contractor and shall not be deemed to represent that the Construction Manager or Architect have made a detailed examination, audit or arithmetic verification of the documentation submitted in accordance with Section 5.1.6.1 or other supporting data; that the Construction Manager or Architect have made exhaustive or continuous on-site inspections; or that the Construction Manager or Architect have made examinations to ascertain how or for what purposes the Contractor has used amounts previously paid on account of the Contract. Such examinations, audits and verifications, if required by the Owner, will be performed by the Owner's auditors acting in the sole interest of the Owner.

**§ 5.1.6.7** Except with the Owner's prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.



## § 5.2 Final Payment

§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

- .1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Section 12.2 of AIA Document A232–2009, and to satisfy other requirements, if any, which extend beyond final payment;
- .2 the Contractor has submitted a final accounting for the Cost of the Work, pursuant to Exhibit A, Determination of the Cost of the Work when payment is on the basis of the Cost of the Work, with or without a Guaranteed Maximum payment; and
- .3 a final Certificate for Payment or Project Certificate for Payment has been issued by the Architect; such final payment shall be made by the Owner not more than 30 days after the issuance of the final Certificate for Payment or Project Certificate for Payment, or as follows:

<< >>

## ARTICLE 6 DISPUTE RESOLUTION

### § 6.1 Initial Decision Maker

The Architect will serve as Initial Decision Maker pursuant to Section 15.2 of AIA Document A232–2009, unless the parties appoint below another individual, not a party to this Agreement, to serve as Initial Decision Maker. *(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)*

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### § 6.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by, mediation pursuant to Section 15.3 of AIA Document A232–2009, the method of binding dispute resolution shall be as follows:

*(Check the appropriate box. If the Owner and Contractor do not select a method of binding dispute resolution below, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.)*

☒ Arbitration pursuant to Section 15.4 of AIA Document A232–2009.

☐ Litigation in a court of competent jurisdiction.

☐ Other: *(Specify)*

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## ARTICLE 7 TERMINATION OR SUSPENSION

### § 7.1 Where the Contract Sum is a Stipulated Sum

§ 7.1.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A232–2009.

§ 7.1.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A232–2009.

### § 7.2 Where the Contract Sum is Based on the Cost of the Work with or without a Guaranteed Maximum Price

§ 7.2.1 Subject to the provisions of Section 7.2.2 below, the Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A232–2009.

§ 7.2.2 The Contract may be terminated by the Owner for cause as provided in Article 14 of AIA Document A232–2009; however, the Owner shall then only pay the Contractor an amount calculated as follows:

- .1 Take the Cost of the Work incurred by the Contractor to the date of termination;
- .2 Add the Contractor's Fee computed upon the Cost of the Work to the date of termination at the rate stated in Sections 4.3.2 or 4.4.2, as applicable, or, if the Contractor's Fee is stated as a fixed sum, an

- amount that bears the same ratio to that fixed-sum Fee as the Cost of the Work at the time of termination bears to a reasonable estimate of the probable Cost of the Work upon its completion; and
- .3 Subtract the aggregate of previous payments made by the Owner.

**§ 7.2.3** If the Owner terminates the Contract for cause when the Contract Sum is based on the Cost of the Work with a Guaranteed Maximum Price, and as provided in Article 14 of AIA Document A232–2009, the amount, if any, to be paid to the Contractor under Section 14.2.4 of AIA Document A232–2009 shall not cause the Guaranteed Maximum Price to be exceeded, nor shall it exceed the amount calculated in Section 7.2.2.

**§ 7.2.4** The Owner shall also pay the Contractor fair compensation, either by purchase or rental at the election of the Owner, for any equipment owned by the Contractor that the Owner elects to retain and that is not otherwise included in the Cost of the Work under Section 7.2.1. To the extent that the Owner elects to take legal assignment of subcontracts and purchase orders (including rental agreements), the Contractor shall, as a condition of receiving the payments referred to in this Article 7, execute and deliver all such papers and take all such steps, including the legal assignment of such subcontracts and other contractual rights of the Contractor, as the Owner may require for the purpose of fully vesting in the Owner the rights and benefits of the Contractor under such subcontracts or purchase orders.

**§ 7.2.5** The Work may be suspended by the Owner as provided in Article 14 of AIA Document A232–2009; in such case, the Contract Sum and Contract Time shall be increased as provided in Section 14.3.2 of AIA Document A232–2009, except that the term ‘profit’ shall be understood to mean the Contractor’s Fee as described in Sections 4.3.2 and 4.4.2 of this Agreement.

## ARTICLE 8 MISCELLANEOUS PROVISIONS

**§ 8.1** Where reference is made in this Agreement to a provision of AIA Document A232–2009 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

**§ 8.2** Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

*(Insert rate of interest agreed upon, if any.)*

<< >> % << >>

**§ 8.3** The Owner’s representative:  
*(Name, address and other information)*

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<< >>  
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**§ 8.4** The Contractor’s representative:  
*(Name, address and other information)*

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**§ 8.5** Neither the Owner’s nor the Contractor’s representative shall be changed without ten days written notice to the other party.

§ 8.6 Other provisions:

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**ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS**

§ 9.1 The Contract Documents, except for Modifications issued after execution of this Agreement, are enumerated in the sections below.

§ 9.1.1 The Agreement is this executed AIA Document A132–2009, Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition.

§ 9.1.2 The General Conditions are AIA Document A232–2009, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition.

§ 9.1.3 The Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages
A232-2009	Section 007300 Supplementary Conditions	May 24, 2017	10

§ 9.1.4 The Specifications:

*(Either list the Specifications here or refer to an exhibit attached to this Agreement.)*

Bid Package “ ” Project Manual dated

§ 9.1.5 The Drawings:

*(Either list the Drawings here or refer to an exhibit attached to this Agreement.)*

As described in the contract documents.

Number	Title	Date
Section 000115	Drawing List	, 2017

§ 9.1.6 The Addenda, if any:

Number	Date	Pages

Portions of Addenda relating to bidding requirements are not part of the Contract Documents unless the bidding requirements are also enumerated in this Article 9.

§ 9.1.7 Additional documents, if any, forming part of the Contract Documents are:

- .1 AIA Document A132™–2009, Exhibit A, Determination of the Cost of the Work, if applicable.
- .2 AIA Document E201™–2007, Digital Data Protocol Exhibit, if completed, or the following:

<< >>

- .3 AIA Document E202™–2008, Building Information Modeling Protocol Exhibit, if completed, or the following:

<< >>

- .4 Other documents, if any, listed below:

*(List here any additional documents which are intended to form part of the Contract Documents. AIA Document A232–2009 provides that bidding requirements such as advertisement or invitation to bid, Instructions to Bidders, sample forms and the Contractor's bid are not part of the Contract Documents unless enumerated in this Agreement. They should be listed here only if intended to be part of the Contract Documents.)*

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## ARTICLE 10 INSURANCE AND BONDS

The Contractor shall purchase and maintain insurance and provide bonds as set forth in Article 11 of AIA Document A232–2009.

*(State bonding requirements, if any, and limits of liability for insurance required in Article 11 of AIA Document A232–2009.)*

Type of Insurance or Bond

Limit of Liability or Bond Amount (\$0.00)

This Agreement is entered into as of the day and year first written above.

OWNER (Signature)

CONTRACTOR (Signature)

« »« »

(Printed name and title)

« »« »

(Printed name and title)

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SECTION 006113 – PERFORMANCE AND PAYMENT BONDS

1. PERFORMANCE AND PAYMENT BONDS

1.1 Bonds must be in the following form:

1. Form of Performance Bond (attached).
2. Form of Payment Bond (attached).

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**SECTION 00 61 13 - FORM OF PAYMENT BOND**

Bond Number:

KNOW ALL PERSONS BY THESE PRESENTS, that we, \_\_\_\_\_, as principal ("Principal"), and \_\_\_\_\_, a \_\_\_\_\_ corporation, legally authorized to do business in the State of Delaware, as surety ("Surety"), are held and firmly bound unto the State of Delaware, **Appoquinimink School District** ("Owner"), in the amount of \_\_\_\_\_ (\$\_\_\_\_\_), to be paid to Owner, for which payment well and truly to be made, we do bind ourselves, our and each and every of our heirs, executors, administrations, successors and assigns, jointly and severally, for and in the whole firmly by these presents.

Sealed with our seals and dated this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

NOW THE CONDITION OF THIS OBLIGATION IS SUCH, that if Principal, who has been awarded by Owner that certain contract known as Contract No. \_\_\_\_\_ dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ (the "Contract"), which Contract is incorporated herein by reference, shall well and truly pay all and every person furnishing materials or performing labor or service in and about the performance of the work under the Contract, all and every sums of money due him, her, them or any of them, for all such materials, labor and service for which Principal is liable, shall make good and reimburse Owner sufficient funds to pay such costs in the completion of the Contract as Owner may sustain by reason of any failure or default on the part of Principal, and shall also indemnify and save harmless Owner from all costs, damages and expenses arising out of or by reason of the performance of the Contract and for as long as provided by the Contract; then this obligation shall be void, otherwise to be and remain in full force and effect.

Surety, for value received, for itself and its successors and assigns, hereby stipulates and agrees that the obligation of Surety and its bond shall be in no way impaired or affected by any extension of time, modification, omission, addition or change in or to the Contract or the work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provisions thereof, or by any assignment, subletting or other transfer thereof or of any work to be performed or any monies due or to become due thereunder; and Surety hereby waives notice of any and all such extensions, modifications, omissions, additions, changes, payments, waivers, things done and omitted to be done by and in relation to assignees, subcontractors, and other transferees shall have the same effect as to Surety as though done or omitted to be done by or in relation to Principal.

Surety hereby stipulates and agrees that no modifications, omission or additions in or to the terms of the Contract shall in any way whatsoever affect the obligation of Surety and its bond. Any proceeding, legal or equitable, under this Bond may be brought in any court of competent jurisdiction in the State of Delaware. Notices to Surety or Contractor may be mailed or delivered to them at their respective addresses shown below.

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IN WITNESS WHEREOF, Principal and Surety have hereunto set their hand and seals, and such of them as are corporations have caused their corporate seal to be hereto affixed and these presents to be signed by their duly authorized officers, the day and year first above written.

Witness or Attest:

PRINCIPAL

By: \_\_\_\_\_

\_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

(Corporate Seal)

Witness or Attest:

SURETY

By: \_\_\_\_\_

\_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

(Corporate Seal)

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**SECTION 00 61 13 - FORM OF PERFORMANCE BOND**

Bond Number: \_\_\_\_\_

KNOW ALL PERSONS BY THESE PRESENTS, that we, \_\_\_\_\_, as principal ("Principal"), and \_\_\_\_\_, a \_\_\_\_\_ corporation, legally authorized to do business in the State of Delaware, as surety ("Surety"), are held and firmly bound unto the State of Delaware, **Appoquinimink School District** ("Owner"), in the amount of \_\_\_\_\_ (\$\_\_\_\_\_) to be paid to Owner, for which payment well and truly to be made, we do bind ourselves, our and each and every of our heirs, executors, administrations, successors and assigns, jointly and severally, for and in the whole, firmly by these presents.

Sealed with our seals and dated this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

NOW THE CONDITION OF THIS OBLIGATION IS SUCH, that if Principal, who has been awarded by Owner that certain contract known as Contract No. \_\_\_\_\_ dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_ (the "Contract"), which Contract is incorporated herein by reference, shall well and truly provide and furnish all materials, appliances and tools and perform all the work required under and pursuant to the terms and conditions of the Contract and the Contract Documents (as defined in the Contract) or any changes or modifications thereto made as therein provided, shall make good and reimburse Owner sufficient funds to pay the costs of completing the Contract that Owner may sustain by reason of any failure or default on the part of Principal, and shall also indemnify and save harmless Owner from all costs, damages and expenses arising out of or by reason of the performance of the Contract and for as long as provided by the Contract; then this obligation shall be void, otherwise to be and remain in full force and effect.

Surety, for value received, hereby stipulates and agrees, if requested to do so by Owner, to fully perform and complete the work to be performed under the Contract pursuant to the terms, conditions and covenants thereof, if for any cause Principal fails or neglects to so fully perform and complete such work

Surety, for value received, for itself and its successors and assigns, hereby stipulates and agrees that the obligation of Surety and its bond shall be in no way impaired or affected by any extension of time, modification, omission, addition or change in or to the Contract or the work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provisions thereof, or by any assignment, subletting or other transfer thereof or of any work to be performed or any monies due or to become due thereunder; and Surety hereby waives notice of any and all such extensions, modifications, omissions, additions, changes, payments, waivers, assignments, subcontracts and transfers and hereby expressly stipulates and agrees that any and all things done and omitted to be done by and in relation to assignees, subcontractors, and other transferees shall have the same effect as to Surety as though done or omitted to be done by or in relation to Principal.



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Surety hereby stipulates and agrees that no modifications, omissions or additions in or to the terms of the Contract shall in any way whatsoever affect the obligation of Surety and its bond.

Any proceeding, legal or equitable, under this Bond may be brought in any court of competent jurisdiction in the State of Delaware. Notices to Surety or Contractor may be mailed or delivered to them at their respective addresses shown below.

IN WITNESS WHEREOF, Principal and Surety have hereunto set their hand and seals, and such of them as are corporations have caused their corporate seal to be hereto affixed and these presents to be signed by their duly authorized officers, the day and year first above written.

Witness or Attest:

PRINCIPAL

By: \_\_\_\_\_

\_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

(Corporate Seal)

Witness or Attest:

SURETY

By: \_\_\_\_\_

\_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

(Corporate Seal)

END OF SECTION

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SECTION 006216 – CERTIFICATE OF INSURANCE

In conjunction with Insurance Requirements AIA General Conditions, Article 11, the Contractor shall be bound by the following limits of liability insurance (for Contracts under this Bid Pac). The Contractor shall use the standard "ACCORD" for titled "Certificate of Insurance" in submitting his liability insurance limits. The required limits to be inserted in accordance with the sample "ACCORD" form in this section:

GENERAL NOTES

1. Other Insurance

A. Contractor shall carry any necessary insurance required to cover Owned and Rental equipment that may be necessary for them to use in the performance of the Work.

2. Contractor shall have the following additional items added to his required "ACCORD" form Certificate of Insurance:

A. Name and Address of Insured (Contractor).

B. Description of Operations/Locations -

3. Added Insured – **Appoquinimink School District and EDiS Company**

4. Certificate Holder – **Appoquinimink School District**

Contractors shall note that although not a part of AIA Document A232 - 2009 Edition, these additional articles apply as noted to this Project.

A sample certificate is bound into the Project Manual immediately following this Document.

END OF SECTION

<b>ACORD™ CERTIFICATE OF LIABILITY INSURANCE</b>						DATE (MM/DD/YY) XX/XX/XX	
<b>PRODUCER</b> PRODUCER INSURANCE AGENCY PO BOX PRODUCER STREET ADDRESS PRODUCER CITY, ST PROD ZIP			THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.				
<b>SAMPLE SUBCONTRACTOR CERTIFICATE</b>			INSURERS AFFORDING COVERAGE				
			INSURER A: XXXXXX				
			INSURED B: XXXXXX				
			INSURER C: XXXXXX				
			INSURER D:				
INSURER E:							
<b>COVERAGES</b> THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.							
INSR LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	DATE (MM/YY)	LIMITS		
	GENERAL LIABILITY <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS MADE <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> GENL. AGGREGATE LIMIT APPLIES PER: POLICY <input checked="" type="checkbox"/> PROJECT <input type="checkbox"/> LOC	XXXXXXXXXXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	EACH OCCURRENCE    \$ 1,000,000 FIRE DAMAGE (Any one fire)    \$ 300,000 MED EXP (Any one person)    \$ 10,000 PERSONAL & ADV INJURY    \$ 1,000,000 GENERAL AGGREGATE    \$ 2,000,000 PRODUCTS - COMP/OP AGG    \$ 2,000,000		
	AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> HIRED AUTOS <input checked="" type="checkbox"/> NON-OWNED AUTOS	XXXXXXXXXXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	COMBINED SINGLE LIMIT (Ea accident)    \$ 1,000,000 BODILY INJURY (Per person)    \$ BODILY INJURY (Per accident)    \$ PROPERTY DAMAGE (Per accident)    \$		
	GARAGE LIABILITY <input type="checkbox"/> ANY AUTO				AUTO ONLY - EA ACCIDENT    \$ OTHER THAN: AUTO    EA ACC    \$ AGG    \$		
	EXCESS LIABILITY <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> CLAIMS MADE <input type="checkbox"/> DEDUCTIBLE <input type="checkbox"/> RETENTION \$	XXXXXXXXXXXXXXXXXX	XXXXXXXXXX	XXXXXXX	EACH OCCURRENCE    \$ 5,000,000 AGGREGATE    \$ 5,000,000 \$ \$ \$		
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY	XXXXXXXXXXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	<input checked="" type="checkbox"/> WC STATUTORY LIMITS <input type="checkbox"/> OTH-ER    \$ E.L. EACH ACCIDENT    \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE    \$ 1,000,000 E.L. DISEASE - POLICY LIMIT    \$ 1,000,000		
	OTHER						
DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/EXCLUSIONS ADDED BY ENDORSEMENT/SPECIAL PROVISIONS <b>Project: Appoquinimink School District Fairview Campus Middle &amp; High School - Appoquinimink School District and EDIS Company shall be named as Additional Insureds under Commercial General Liability, Automobile Liability and Umbrella Liability for both ongoing and completed operations. The endorsements providing the Additional Insured status for ongoing and completed operations must be attached to the Certificate of Insurance.</b>							
CERTIFICATE HOLDER    X    ADDITIONAL INSURED; INSURER LETTER:    CANCELLATION							
Appoquinimink School District 118 South Sixth Street Odessa, DE 19730					SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES. AUTHORIZED REPRESENTATIVE		

ACORD 25-S (7/97)

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SECTION 007200 – GENERAL CONDITIONS

1. SUMMARY

- A. The General Conditions for this Project are the American Institute of Architects General Conditions of the Contract for Construction, Construction Manager as Advisor Edition, AIA Document A232 - 2009 Edition.
- B. A copy of AIA Document A232 - 2009 Edition is bound into this Project Manual following this page

END OF SECTION

# DRAFT AIA® Document A232™ – 2009

## *General Conditions of the Contract for Construction, Construction Manager as Adviser Edition*

### **for the following PROJECT:**

*(Name, and location or address)*

New High School and New Middle School at Fairview Campus  
Old State Road  
Townsend, DE 19734

### **THE CONSTRUCTION MANAGER:**

*(Name, legal status and address)*

EDiS Company  
110 S. Poplar Street  
Suite 400  
Wilmington, DE 19801

### **THE OWNER:**

*(Name, legal status and address)*

Appoquinimink School District  
P.O. Box 4010  
Odessa, DE 19730-4010

### **THE ARCHITECT:**

*(Name, legal status and address)*

ABHA /BSA+A  
1621 N. Lincoln Street  
Wilmington, De 19806

#### **ADDITIONS AND DELETIONS:**

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

This document is intended to be used in conjunction with AIA Documents A132™-2009, Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition; B132™-2009, Standard Form of Agreement Between Owner and Architect, Construction Manager as Adviser Edition; and C132™-2009, Standard Form of Agreement Between Owner and Construction Manager as Adviser.

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## ARTICLE 1 GENERAL PROVISIONS

### § 1.1 Basic Definitions

**§ 1.1.1 The Contract Documents.** The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement), and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of addenda relating to bidding requirements).

**§ 1.1.2 The Contract.** The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and the Construction Manager or the Construction Manager's consultants, (3) between the Owner and the Architect or the Architect's consultants, (4) between the Contractor and the Construction Manager or the Construction Manager's consultants, (5) between the Owner and a Subcontractor or Sub-subcontractor (6) between the Construction Manager and the Architect, or (7) between any persons or entities other than the Owner and Contractor. The Construction Manager and Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of their duties.

**§ 1.1.3 The Work.** The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

**§ 1.1.4 The Project.** The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by other Multiple Prime Contractors and by the Owner's own forces, including persons or entities under separate contracts not administered by the Construction Manager.

**§ 1.1.5 The Drawings.** The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.

**§ 1.1.6 The Specifications.** The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

**§ 1.1.7 Instruments of Service.** Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

**§ 1.1.8 Initial Decision Maker.** The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2 and certify termination of the Agreement under Section 14.2.2.

### § 1.2 Correlation and Intent of the Contract Documents

**§ 1.2.1** The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

**§ 1.2.2** Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

**§ 1.2.3** Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

### **§ 1.3 Capitalization**

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles or (3) the titles of other documents published by the American Institute of Architects.

### **§ 1.4 Interpretation**

In the interest of brevity the Contract Documents frequently omit modifying words such as “all” and “any” and articles such as “the” and “an,” but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

### **§ 1.5 Ownership and Use of Drawings, Specifications and Other Instruments of Service**

**§ 1.5.1** The Architect and the Architect’s consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and will retain all common law, statutory and other reserved rights, including copyrights. The Contractor, Subcontractors, sub-subcontractors, and material or equipment suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Architect, or Architect’s consultants’ reserved rights.

**§ 1.5.2** The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers are authorized to use and reproduce the Instruments of Service provided to them solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers may not use the Instruments of Service on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect and the Architect’s consultants.

### **§ 1.6 Transmission of Data in Digital Form**

If the parties intend to transmit Instruments of Service or any other information or documentation in digital form, they shall endeavor to establish necessary protocols governing such transmissions, unless otherwise already provided in the Agreement or the Contract Documents.

## **ARTICLE 2 OWNER**

### **§ 2.1 General**

**§ 2.1.1** The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner’s approval or authorization. Except as otherwise provided in Article 4, the Construction Manager and the Architect do not have such authority. The term “Owner” means the Owner or the Owner’s authorized representative.

**§ 2.1.2** The Owner shall furnish to the Contractor within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of or enforce mechanic’s lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner’s interest therein.

### **§ 2.2 Information and Services Required of the Owner**

**§ 2.2.1** Prior to commencement of the Work, the Contractor may request in writing that the Owner provide reasonable evidence that the Owner has made financial arrangements to fulfill the Owner’s obligations under the Contract. Thereafter, the Contractor may only request such evidence if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) a change in the Work materially changes the Contract Sum; or (3) the Contractor identifies in writing a reasonable concern regarding the Owner’s ability to make payment when due. The Owner shall furnish such evidence as a condition precedent to commencement or continuation of the Work or the portion of the Work affected by a material change. After the Owner furnishes the evidence, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.



**§ 2.2.2** Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities. Unless otherwise provided under the Contract Documents, the Owner, through the Construction Manager, shall secure and pay for the building permit.

**§ 2.2.3** The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

**§ 2.2.4** The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

**§ 2.2.5** Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

**§ 2.2.6** The Owner shall endeavor to forward all communications to the Contractor through the Construction Manager and shall contemporaneously provide the same communications to the Architect about matters arising out of or relating to the Contract Documents.

### **§ 2.3 Owner's Right to Stop the Work**

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

### **§ 2.4 Owner's Right to Carry Out the Work**

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Construction Manager's and Architect's and their respective consultants' additional services made necessary by such default, neglect or failure. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect, after consultation with the Construction Manager. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

## **ARTICLE 3 CONTRACTOR**

### **§ 3.1 General**

**§ 3.1.1** The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

**§ 3.1.2** The plural term "Multiple Prime Contractors" refers to persons or entities who perform construction under contracts with the Owner that are administered by the Construction Manager. The term does not include the Owner's own forces, including persons or entities under separate contracts not administered by the Construction Manager.

**§ 3.1.3** The Contractor shall perform the Work in accordance with the Contract Documents.

**§ 3.1.4** The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Construction Manager or Architect in their administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

### **§ 3.2 Review of Contract Documents and Field Conditions by Contractor**

**§ 3.2.1** Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents.

**§ 3.2.2** Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.2.3, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Construction Manager and Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information submitted to the Construction Manager in such form as the Construction Manager and Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

**§ 3.2.3** The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Construction Manager and Architect any nonconformity discovered by or made known to the Contractor as a request for information submitted to Construction Manager in such form as the Construction Manager and Architect may require.

**§ 3.2.4** If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall make Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

### **§ 3.3 Supervision and Construction Procedures**

**§ 3.3.1** The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instruction concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, except as stated below, shall be fully and solely responsible for the jobsite safety of such means, methods, techniques, sequences or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner, the Construction Manager, and the Architect and shall not proceed with that portion of the Work without further written instructions from the Architect, through the Construction Manager. If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor, the Owner shall be solely responsible for any loss or damage arising solely from those Owner-required means, methods, techniques, sequences or procedures.

**§ 3.3.2** The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

**§ 3.3.3** The Contractor shall be responsible for inspection of portions of the Project already performed to determine that such portions are in proper condition to receive subsequent Work.

### **§ 3.4 Labor and Materials**

**§ 3.4.1** Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

**§ 3.4.2** Except in the case of minor changes in the Work authorized by the Architect in accordance with Sections 3.12.8 or 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect, in consultation with the Construction Manager, and in accordance with a Change Order or Construction Change Directive.

**§ 3.4.3** The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

### **§ 3.5 Warranty**

The Contractor warrants to the Owner, Construction Manager, and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform with the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Construction Manager or Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

### **§ 3.6 Taxes**

The Contractor shall pay sales, consumer, use and similar taxes for the Work or portions thereof provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

### **§ 3.7 Permits, Fees, Notices, and Compliance with Laws**

**§ 3.7.1** Unless otherwise provided in the Contract Documents, the Owner, through the Construction Manager, shall secure and pay for the building permit. The Contractor shall secure and pay for other permits, fees, licenses and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

**§ 3.7.2** The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

**§ 3.7.3** If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

**§ 3.7.4 Concealed or Unknown Conditions.** If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner, Construction Manager, and the Architect before conditions are disturbed and in no event later than 21 days after first observance of the conditions. The Architect and Construction Manager will promptly investigate such conditions and, if the Architect, in consultation with the Construction Manager, determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect, in consultation with the Construction Manager, determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner, Construction

Manager, and Contractor in writing, stating the reasons. If the Owner or Contractor disputes the Architect's determination or recommendation, either party may proceed as provided in Article 15.

**§ 3.7.5** If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner, Construction Manager, and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

### **§ 3.8 Allowances**

**§ 3.8.1** The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

**§ 3.8.2** Unless otherwise provided in the Contract Documents:

- .1 Allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- .3 Whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

**§ 3.8.3** Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

### **§ 3.9 Superintendent**

**§ 3.9.1** The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

**§ 3.9.2** The Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner and Architect through the Construction Manager, the name and qualifications of a proposed superintendent. The Construction Manager may reply within 14 days to the Contractor in writing stating (1) whether the Owner, the Construction Manager, or the Architect has reasonable objection to the proposed superintendent or (2) that any of them require additional time to review. Failure of the Construction Manager to reply within the 14 day period shall constitute notice of no reasonable objection.

**§ 3.9.3** The Contractor shall not employ a proposed superintendent to whom the Owner, Construction Manager or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

### **§ 3.10 Contractor's Construction Schedules**

**§ 3.10.1** The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information and the Construction Manager's approval a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project schedule to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work. The Contractor shall cooperate with the Construction Manager in scheduling and performing the Contractor's Work to avoid conflict with, and as to cause no delay in, the work or activities of other Multiple Prime Contractors or the construction or operations of the Owner's own forces.

**§ 3.10.2** The Contractor shall prepare a submittal schedule, promptly after being awarded the Contract and thereafter update it as necessary to maintain a current submittal schedule, and shall submit the schedule(s) for the Construction Manager's and Architect's approval. The Architect and Construction Manager's approval shall not unreasonably be delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Construction Manager and Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

**§ 3.10.3** The Contractor shall participate with other Contractors, the Construction Manager and Owner in reviewing and coordinating all schedules for incorporation into the Project schedule that is prepared by the Construction Manager. The Contractor shall make revisions to the construction schedule and submittal schedule as deemed necessary by the Construction Manager to conform to the Project schedule.

**§ 3.10.4** The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner, Construction Manager and Architect and incorporated into the approved Project schedule.

### **§ 3.11 Documents and Samples at the Site**

The Contractor shall maintain at the site for the Owner one copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and one copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These documents shall be available to the Architect and delivered to the Construction Manager for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

### **§ 3.12 Shop Drawings, Product Data and Samples**

**§ 3.12.1** Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

**§ 3.12.2** Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

**§ 3.12.3** Samples are physical examples that illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

**§ 3.12.4** Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. Their purpose is to demonstrate the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect and Construction Manager is subject to the limitations of Sections 4.2.9 through 4.2.11. Informational submittals upon which the Construction Manager and Architect are not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Construction Manager or Architect without action.

**§ 3.12.5** The Contractor shall review for compliance with the Contract Documents, approve and submit to the Construction Manager Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents in accordance with the Project submittal schedule approved by the Construction Manager and Architect, or in the absence of an approved Project submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of other Multiple Prime Contractors or the Owner's own forces. The Contractor shall cooperate with the Construction Manager in the coordination of the Contractor's Shop Drawings, Product Data, Samples and similar submittals with related documents submitted by other Multiple Prime Contractors.

**§ 3.12.6** By submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents to the Owner, Construction Manager, and Architect, that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.



**§ 3.12.7** The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been reviewed and approved by the Architect.

**§ 3.12.8** The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Construction Manager and Architect in writing of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Architect's approval thereof.

**§ 3.12.9** The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Construction Manager and Architect on previous submittals. In the absence of such written notice, the Architect's approval of a resubmission shall not apply to such revisions.

**§ 3.12.10** The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be required to provide professional services in violation of applicable law. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a properly licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review, approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Contractor shall not be responsible for the adequacy of the performance and design criteria specified in the Contract Documents.

### **§ 3.13 Use of Site**

**§ 3.13.1** The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

**§ 3.13.2** The Contractor shall coordinate the Contractor's operations with, and secure the approval of, the Construction Manager before using any portion of the site.

### **§ 3.14 Cutting and Patching**

**§ 3.14.1** The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting and patching shall be restored to the condition existing prior to the cutting, fitting and patching, unless otherwise required by the Contract Documents.

**§ 3.14.2** The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner's own forces or of other Multiple Prime Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the Owner's own forces or by other Multiple Prime Contractors except with written consent of the Construction Manager, Owner and such other Multiple Prime Contractors; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the other Multiple Prime Contractors or the Owner the Contractor's consent to cutting or otherwise altering the Work.

### **§ 3.15 Cleaning Up**

**§ 3.15.1** The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials from and about the Project.

**§ 3.15.2** If the Contractor fails to clean up as provided in the Contract Documents, the Owner, or Construction Manager with the Owner's approval, may do so and the Owner shall be entitled to reimbursement from the Contractor.

### **§ 3.16 Access to Work**

The Contractor shall provide the Owner, Construction Manager and Architect access to the Work in preparation and progress wherever located.

### **§ 3.17 Royalties, Patents and Copyrights**

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner, Construction Manager and Architect harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents or where the copyright violations are contained in Drawings, Specifications or other documents prepared by the Owner, Architect, or Construction Manager. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Architect through the Construction Manager.

### **§ 3.18 Indemnification**

**§ 3.18.1** To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Construction Manager, Architect, Construction Manager's and Architect's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

**§ 3.18.2** In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

## **ARTICLE 4 ARCHITECT AND CONSTRUCTION MANAGER**

### **§ 4.1 General**

**§ 4.1.1** The Owner shall retain an architect lawfully licensed to practice architecture or an entity lawfully practicing architecture in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

**§ 4.1.2** The Owner shall retain a construction manager lawfully licensed to practice construction management or an entity lawfully practicing construction management in the jurisdiction where the Project is located. That person or entity is identified as the Construction Manager in the Agreement and is referred to throughout the Contract Documents as if singular in number.

**§ 4.1.3** Duties, responsibilities and limitations of authority of the Construction Manager and Architect as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner, Construction Manager, Architect and Contractor. Consent shall not be unreasonably withheld.

**§ 4.1.4** If the employment of the Construction Manager or Architect is terminated, the Owner shall employ a successor construction manager or architect as to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Construction Manager or Architect, respectively.

## **§ 4.2 Administration of the Contract**

**§ 4.2.1** The Construction Manager and Architect will provide administration of the Contract as described in the Contract Documents and will be the Owner's representatives during construction until the date the Architect issues the final Certificate for Payment. The Construction Manager and Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

**§ 4.2.2** The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and report to the Owner and Construction Manager (1) known deviations from the Contract Documents and from the most recent Project schedule prepared by the Construction Manager, and (2) defects and deficiencies observed in the Work.

**§ 4.2.3** The Construction Manager shall provide a staffing plan to include one or more representatives who shall be in attendance at the Project site whenever the Work is being performed. The Construction Manager will determine in general if the Work observed is being performed in accordance with the Contract Documents, will keep the Owner reasonably informed of the progress of the Work, and will report to the Owner and Architect (1) known deviations from the Contract Documents and the most recent Project schedule, and (2) defects and deficiencies observed in the Work.

**§ 4.2.4** The Construction Manager will schedule and coordinate the activities of the Contractor and other Multiple Prime Contractors in accordance with the latest approved Project schedule.

**§ 4.2.5** The Construction Manager, except to the extent required by Section 4.2.4, and Architect will not have control over, or charge of, construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, except as provided in Section 3.3.1, and neither will be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. Neither the Construction Manager nor the Architect will have control over or charge of or be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or of any other persons or entities performing portions of the Work.

**§ 4.2.6 Communications Facilitating Contract Administration.** Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate with each other through the Construction Manager, and shall contemporaneously provide the same communications to the Architect about matters arising out of or relating to the Contract Documents. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with other Multiple Prime Contractors shall be through the Construction Manager and shall be contemporaneously provided to the Architect if those communications are about matters arising out of or related to the Contract Documents. Communications by and with the Owner's own forces shall be through the Owner.

**§ 4.2.7** The Construction Manager and Architect will review and certify all Applications for Payment by the Contractor, in accordance with the provisions of Article 9.

**§ 4.2.8** The Architect and Construction Manager have authority to reject Work that does not conform to the Contract Documents and will notify each other about the rejection. The Construction Manager shall determine in general whether the Work of the Contractor is being performed in accordance with the requirements of the Contract Documents and notify the Owner, Contractor and Architect of defects and deficiencies in the Work. Whenever the Construction Manager considers it necessary or advisable, the Construction Manager will have authority to require additional inspection or testing of the Work in accordance with Sections 13.5.2 and 13.5.3, upon written



authorization of the Owner, whether or not such Work is fabricated, installed or completed. The foregoing authority of the Construction Manager will be subject to the provisions of Sections 4.2.18 through 4.2.20 inclusive, with respect to interpretations and decisions of the Architect. However, neither the Architect's nor the Construction Manager's authority to act under this Section 4.2.8 nor a decision made by either of them in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect or the Construction Manager to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons performing any of the Work.

**§ 4.2.9** The Construction Manager will receive and promptly review for conformance with the submittal requirements of the Contract Documents, all submittals from the Contractor such as Shop Drawings, Product Data and Samples. Where there are Multiple Prime Contractors, the Construction Manager will also check and coordinate the information contained within each submittal received from Contractor and other Multiple Prime Contractors, and transmit to the Architect those recommended for approval. By submitting Shop Drawings, Product Data, Samples and similar submittals, the Construction Manager represents to the Owner and Architect that the Construction Manager has reviewed and recommended them for approval. The Construction Manager's actions will be taken in accordance with the Project submittal schedule approved by the Architect or, in the absence of an approved Project submittal schedule, with reasonable promptness while allowing sufficient time to permit adequate review by the Architect.

**§ 4.2.10** The Architect will review and approve or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Upon the Architect's completed review, the Architect shall transmit its submittal review to the Construction Manager.

**§ 4.2.11** Review of the Contractor's submittals by the Construction Manager and Architect is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Construction Manager and Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5 and 3.12. The Construction Manager and Architect's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Construction Manager and Architect, of any construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

**§ 4.2.12** The Construction Manager will prepare Change Orders and Construction Change Directives.

**§ 4.2.13** The Construction Manager and the Architect will take appropriate action on Change Orders or Construction Change Directives in accordance with Article 7 and the Architect will have authority to order minor changes in the Work as provided in Section 7.4. The Architect, in consultation with the Construction Manager, will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

**§ 4.2.14** Utilizing the documents provided by the Contractor, the Construction Manager will maintain at the site for the Owner one copy of all Contract Documents, approved Shop Drawings, Product Data, Samples and similar required submittals, in good order and marked currently to record all changes and selections made during construction. These will be available to the Architect and the Contractor, and will be delivered to the Owner upon completion of the Project.

**§ 4.2.15** The Construction Manager will assist the Architect in conducting inspections to determine the dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion in conjunction with the Architect pursuant to Section 9.8; and receive and forward to the Owner written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10. The Construction Manager will forward to the Architect a final Application and Certificate for Payment or final Project Application and Project Certificate for Payment upon the Contractor's compliance with the requirements of the Contract Documents.

§ 4.2.16 If the Owner and Architect agree, the Architect will provide one or more project representatives to assist in carrying out the Architect's responsibilities at the site. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents.

§ 4.2.17 The Architect will interpret and decide matters concerning performance under, and requirements of the Contract Documents on written request of the Construction Manager, Owner or Contractor through the Construction Manager. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.18 Interpretations and decisions of the Architect will be consistent with the intent of and reasonably inferable from the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either and will not be liable for results of interpretations or decisions so rendered in good faith.

§ 4.2.19 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.20 The Construction Manager will receive and review requests for information from the Contractor, and forward each request for information to the Architect, with the Construction Manager's recommendation. The Architect will review and respond in writing to the Construction Manager to requests for information about the Contract Documents. The Construction Manager's recommendation and the Architect's response to each request will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

## ARTICLE 5 SUBCONTRACTORS

### § 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include other Multiple Prime Contractors or subcontractors of other Multiple Prime Contractors.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

### § 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Construction Manager for review by the Owner, Construction Manager and Architect the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Construction Manager may reply within 14 days to the Contractor in writing stating (1) whether the Owner, the Construction Manager or the Architect has reasonable objection to any such proposed person or entity or, (2) that the Construction Manager, Architect or Owner requires additional time for review. Failure of the Construction Manager, Owner, or Architect to reply within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner, Construction Manager or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner, Construction Manager or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner, Construction Manager or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's

Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

**§ 5.2.4** The Contractor shall not substitute a Subcontractor, person or entity previously selected if the Owner, Construction Manager or Architect makes reasonable objection to such substitution.

### **§ 5.3 Subcontractual Relations**

By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including responsibility for safety of the Subcontractor's Work, which the Contractor, by these Documents, assumes toward the Owner, Construction Manager and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner, Construction Manager and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

### **§ 5.4 Contingent Assignment of Subcontracts**

**§ 5.4.1** Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor in writing; and
- .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

**§ 5.4.2** Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

**§ 5.4.3** Upon such assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor Contractor or other entity. If the Owner assigns the subcontract to a successor Contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor Contractor's obligations under the subcontract.

## **ARTICLE 6 CONSTRUCTION BY OWNER OR BY OTHER CONTRACTORS**

### **§ 6.1 Owner's Right to Perform Construction with Own Forces and to Award Other Contracts**

**§ 6.1.1** The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, which include persons or entities under separate contracts not administered by the Construction Manager, and to award other contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided in Article 15.

**§ 6.1.2** When the Owner performs construction or operations with the Owner's own forces including persons or entities under separate contracts not administered by the Construction Manager, the Owner shall provide for coordination of such forces with the Work of the Contractor, who shall cooperate with them.

**§ 6.1.3** Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces, the Owner shall be deemed to be subject to the same obligations

and to have the same rights that apply to the Contractor under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11 and 12.

## **§ 6.2 Mutual Responsibility**

**§ 6.2.1** The Contractor shall afford the Owner's own forces, Construction Manager and other Multiple Prime Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

**§ 6.2.2** If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner's own forces or other Multiple Prime Contractors, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Construction Manager and Architect apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acknowledgment that the Owner's own forces or other Multiple Prime Contractors' completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.

**§ 6.2.3** The Contractor shall reimburse the Owner for costs the Owner incurs, including costs that are payable to a separate contractor or to other Multiple Prime Contractors because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of delays, improperly timed activities, damage to the Work or defective construction by the Owner's own forces or other Multiple Prime Contractors.

**§ 6.2.4** The Contractor shall promptly remedy damage the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner, separate contractors, or other Multiple Prime Contractors as provided in Section 10.2.5.

**§ 6.2.5** The Owner and other Multiple Prime Contractors shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

## **§ 6.3 Owner's Right to Clean Up**

If a dispute arises among the Contractor, other Multiple Prime Contractors and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Construction Manager, with notice to the Architect, will allocate the cost among those responsible.

## **ARTICLE 7 CHANGES IN THE WORK**

### **§ 7.1 General**

**§ 7.1.1** Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

**§ 7.1.2** A Change Order shall be based upon agreement among the Owner, Construction Manager, Architect and Contractor; a Construction Change Directive requires agreement by the Owner, Construction Manager and Architect and may or may not be agreed to by the Contractor; an order for a minor change in the Work may be issued by the Architect alone.

**§ 7.1.3** Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change Directive or order for a minor change in the Work.

### **§ 7.2 Change Orders**

A Change Order is a written instrument prepared by the Construction Manager and signed by the Owner, Construction Manager, Architect and Contractor, stating their agreement upon all of the following:

- .1 The change in the Work;
- .2 The amount of the adjustment, if any, in the Contract Sum; and
- .3 The extent of the adjustment, if any, in the Contract Time.

### § 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Construction Manager and signed by the Owner, Construction Manager and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 Unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- .4 As provided in Section 7.3.7.

§ 7.3.4 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed in a proposed Change Order or Construction Change Directive so that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 7.3.5 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Construction Manager and Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.6 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.7 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Construction Manager shall determine the method and the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Construction Manager may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.7 shall be limited to the following:

- .1 Costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers compensation insurance;
- .2 Costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;
- .3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- .4 Costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and
- .5 Additional costs of supervision and field office personnel directly attributable to the change.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Construction Manager and Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment.



The Construction Manager and Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Construction Manager and Architect determine to be reasonably justified. The interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

**§ 7.3.10** When the Owner and Contractor agree with a determination made by the Construction Manager and Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Construction Manager shall prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

#### **§ 7.4 Minor Changes in the Work**

The Architect has authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes will be effected by written order issued through the Construction Manager and shall be binding on the Owner and Contractor.

### **ARTICLE 8 TIME**

#### **§ 8.1 Definitions**

**§ 8.1.1** Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

**§ 8.1.2** The date of commencement of the Work is the date established in the Agreement.

**§ 8.1.3** The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

**§ 8.1.4** The term “day” as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

#### **§ 8.2 Progress and Completion**

**§ 8.2.1** Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

**§ 8.2.2** The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance.

**§ 8.2.3** The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

#### **§ 8.3 Delays and Extensions of Time**

**§ 8.3.1** If the Contractor is delayed at any time in the commencement or progress of the Work by an act or neglect of the Owner, Owner’s own forces, Construction Manager, Architect, any of the other Multiple Prime Contractors or an employee of any of them, or by changes ordered in the Work, or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor’s control; or by delay authorized by the Owner pending mediation and arbitration, or by other causes that the Architect, based on the recommendation of the Construction Manager, determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect may determine.

**§ 8.3.2** Claims relating to time shall be made in accordance with applicable provisions of Article 15.

**§ 8.3.3** This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

## **ARTICLE 9 PAYMENTS AND COMPLETION**

### **§ 9.1 Contract Sum**

The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

### **§ 9.2 Schedule of Values**

Where the Contract is based on a Stipulated Sum or Guaranteed Maximum Price, the Contractor shall submit to the Construction Manager, before the first Application for Payment, a schedule of values allocating the entire Contract Sum to the various portions of the Work and prepared in such form and supported by such data to substantiate its accuracy as the Construction Manager and Architect may require. This schedule, unless objected to by the Construction Manager or Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. In the event there is one Contractor, the Construction Manager shall forward to the Architect the Contractor's schedule of values. If there are Multiple Prime Contractors responsible for performing different portions of the Project, the Construction Manager shall forward the Multiple Prime Contractors' schedules of values only if requested by the Architect.

### **§ 9.3 Applications for Payment**

**§ 9.3.1** At least fifteen days before the date established for each progress payment, the Contractor shall submit to the Construction Manager an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. Such application shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the Owner, Construction Manager or Architect may require, such as copies of requisitions from Subcontractors and material suppliers, and shall reflect retainage if provided for in the Contract Documents.

**§ 9.3.1.1** As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Construction Manager and Architect, but not yet included in Change Orders.

**§ 9.3.1.2** Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or material supplier unless such Work has been performed by others whom the Contractor intends to pay.

**§ 9.3.2** Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage and transportation to the site for such materials and equipment stored off the site.

**§ 9.3.3** The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

### **§ 9.4 Certificates for Payment**

**§ 9.4.1** Where there is only one Contractor, the Construction Manager will, within seven days after the Construction Manager's receipt of the Contractor's Application for Payment, review the Application, certify the amount the Construction Manager determines is due the Contractor, and forward the Contractor's Application and Certificate for Payment to the Architect. Within seven days after the Architect receives the Contractor's Application for Payment from the Construction Manager, the Architect will either issue to the Owner a Certificate for Payment, with a copy to the Construction Manager, for such amount as the Architect determines is properly due, or notify the Construction Manager and Owner in writing of the Architect's reasons for withholding certification in whole or in part as provided in Section 9.5.1. The Construction Manager will promptly forward to the Contractor the Architect's notice of withholding certification.

**§ 9.4.2** Where there are Multiple Prime Contractors performing portions of the Project, the Construction Manager will, within seven days after the Construction Manager receives the Multiple Prime Contractors' Applications for Payment: (1) review the Applications and certify the amount the Construction Manager determines is due each of the Multiple Prime Contractors; (2) prepare a Summary of Contractors' Applications for Payment by combining information from each Multiple Prime Contractors' application with information from similar applications for progress payments from other Multiple Prime Contractors; (3) prepare a Project Application and Certificate for Payment; (4) certify the amount the Construction Manager determines is due all Multiple Prime Contractors; and (5) forward the Summary of Contractors' Applications for Payment and Project Application and Certificate for Payment to the Architect.

**§ 9.4.3** Within seven days after the Architect receives the Project Application and Project Certificate for Payment and the Summary of Contractors' Applications for Payment from the Construction Manager, the Architect will either issue to the Owner a Project Certificate for Payment, with a copy to the Construction Manager, for such amount as the Architect determines is properly due, or notify the Construction Manager and Owner in writing of the Architect's reasons for withholding certification in whole or in part as provided in Section 9.5.1. The Construction Manager will promptly forward the Architect's notice of withholding certification to the Contractors.

**§ 9.4.4** The Construction Manager's certification of an Application for Payment or, in the case of Multiple Prime Contractors, a Project Application and Certificate for Payment shall be based upon the Construction Manager's evaluation of the Work and the information provided as part of the Application for Payment. The Construction Manager's certification will constitute a representation that, to the best of the Construction Manager's knowledge, information and belief, the Work has progressed to the point indicated and the quality of the Work is in accordance with the Contract Documents. The certification will also constitute a recommendation to the Architect and Owner that the Contractor be paid the amount certified.

**§ 9.4.5** The Architect's issuance of a Certificate for Payment or in the case of Multiple Prime Contractors, Project Application and Certificate for Payment, shall be based upon the Architect's evaluation of the Work, the recommendation of the Construction Manager, and information provided as part of the Application for Payment or Project Application for Payment. The Architect's certification will constitute a representation that, to the best of the Architect's knowledge, information and belief, the Work has progressed to the point indicated, that the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified.

**§ 9.4.6** The representations made pursuant to Sections 9.4.4 and 9.4.5 are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion and to specific qualifications expressed by the Construction Manager or Architect.

**§ 9.4.7** The issuance of a separate Certificate for Payment or a Project Certificate for Payment will not be a representation that the Construction Manager or Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed the Contractor's construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

## **§ 9.5 Decisions to Withhold Certification**

**§ 9.5.1** The Construction Manager or Architect may withhold a Certificate for Payment or Project Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Construction Manager's or Architect's opinion the representations to the Owner required by Section 9.4.4 and 9.4.5 cannot be made. If the Construction Manager or Architect is unable to certify payment in the amount of the Application, the Construction Manager will notify the Contractor and Owner as provided in Section 9.4.1 and 9.4.3. If the Contractor, Construction Manager and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment or a Project Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Construction Manager or Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence or subsequent observations, may nullify the whole or a part of a Certificate for Payment or Project Certificate for Payment previously issued, to such extent as may be necessary in the Construction Manager's or Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from the acts and omissions described in Section 3.3.2 because of



- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a separate contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents.

**§ 9.5.2** When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld.

**§ 9.5.3** If the Architect or Construction Manager withholds certification for payment under Section 9.5.1, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or material or equipment suppliers to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Construction Manager and both will reflect such payment on the next Certificate for Payment.

#### **§ 9.6 Progress Payments**

**§ 9.6.1** After the Architect has issued a Certificate for Payment or Project Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Construction Manager and Architect.

**§ 9.6.2** The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

**§ 9.6.3** The Construction Manager will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Owner, Construction Manager and Architect on account of portions of the Work done by such Subcontractor.

**§ 9.6.4** The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and material and equipment suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors to ascertain whether they have been properly paid. Neither the Owner, Construction Manager nor Architect shall have an obligation to pay or to see to the payment of money to a Subcontractor except as may otherwise be required by law.

**§ 9.6.5** Contractor payments to material and equipment suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

**§ 9.6.6** A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

**§ 9.6.7** Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors and suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, shall create any fiduciary liability or tort liability on the part of the Contractor for breach of trust or shall entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

## **§ 9.7 Failure of Payment**

If the Construction Manager and Architect do not issue a Certificate for Payment or a Project Certificate for Payment, through no fault of the Contractor, within fourteen days after the Construction Manager's receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents the amount certified by the Construction Manager and Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' written notice to the Owner, Construction Manager and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, plus interest as provided for in the Contract Documents.

## **§ 9.8 Substantial Completion**

**§ 9.8.1** Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so the Owner can occupy or utilize the Work for its intended use.

**§ 9.8.2** When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall notify the Construction Manager, and the Contractor and Construction Manager shall jointly prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

**§ 9.8.3** Upon receipt of the list, the Architect, assisted by the Construction Manager, will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the list, which is not sufficiently complete in accordance with the requirements of the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect, assisted by the Construction Manager, to determine Substantial Completion.

**§ 9.8.4** When the Architect, assisted by the Construction Manager, determines that the Work or designated portion thereof is substantially complete, the Construction Manager will prepare, and the Construction Manager and Architect shall execute a Certificate of Substantial Completion that shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

**§ 9.8.5** The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate. Upon such acceptance and consent of surety, if any, the Owner shall make payment of retainage applying to such Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

## **§ 9.9 Partial Occupancy or Use**

**§ 9.9.1** The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer as required under Section 11.3.1.5 and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor and Construction Manager shall jointly prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect after consultation with the Construction Manager.

**§ 9.9.2** Immediately prior to such partial occupancy or use, the Owner, Construction Manager, Contractor and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

**§ 9.9.3** Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

#### **§ 9.10 Final Completion and Final Payment**

**§ 9.10.1** Upon completion of the Work, the Contractor shall forward to the Construction Manager a written notice that the Work is ready for final inspection and acceptance and shall also forward to the Construction Manager a final Contractor's Application for Payment. Upon receipt, the Construction Manager will evaluate the completion of Work of the Contractor and then forward the notice and Application, with the Construction Manager's recommendations, to the Architect who will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Construction Manager and Architect will promptly issue a final Certificate for Payment or Project Certificate for Payment stating that to the best of their knowledge, information and belief, and on the basis of their on-site visits and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Construction Manager's and Architect's final Certificate for Payment or Project Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

**§ 9.10.2** Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect through the Construction Manager (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment and (5), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

**§ 9.10.3** If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Construction Manager and Architect so confirm, the Owner shall, upon application by the Contractor and certification by the Construction Manager and Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect through the Construction Manager prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

**§ 9.10.4** The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- .1 liens, Claims, security interests or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents; or
- .3 terms of special warranties required by the Contract Documents.

**§ 9.10.5** Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

## **ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY**

### **§ 10.1 Safety Precautions and Programs**

The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract. The Contractor shall submit the Contractor's safety program to the Construction Manager for review and coordination with the safety programs of other Contractors. The Construction Manager's responsibilities for review and coordination of safety programs shall not extend to direct control over or charge of the acts or omissions of the Contractors, Subcontractors, agents or employees of the Contractors or Subcontractors, or any other persons performing portions of the Work and not directly employed by the Construction Manager.

### **§ 10.2 Safety of Persons and Property**

**§ 10.2.1** The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to

- .1 employees on the Work and other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors;
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction; and
- .4 construction or operations by the Owner or other Contractors.

**§ 10.2.2** The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss.

**§ 10.2.3** The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities.

**§ 10.2.4** When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

**§ 10.2.5** The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2, 10.2.1.3 and 10.2.1.4 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2, 10.2.1.3 and 10.2.1.4, except damage or loss attributable to acts or omissions of the Owner, Construction Manager or Architect or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

**§ 10.2.6** The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner, Construction Manager and Architect.

**§ 10.2.7** The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

### **§ 10.2.8 Injury or Damage to Person or Property**

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

### **§ 10.3 Hazardous Materials**

**§ 10.3.1** The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to, asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Owner, Construction Manager and Architect in writing.

**§ 10.3.2** Upon receipt of the Contractor's written notice, the Owner shall obtain the services of a licensed laboratory to verify a presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor, Construction Manager and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of such material or substance or who are to perform the task of removal or safe containment of such material or substance. The Contractor, the Construction Manager and the Architect will promptly reply to the Owner in writing stating whether or not any of them has reasonable objection to the persons or entities proposed by the Owner. If the Contractor, Construction Manager or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor, the Construction Manager and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs of shut-down, delay and start-up.

**§ 10.3.3** To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Construction Manager, Architect, their consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss or expense is due to the fault or negligence of the party seeking indemnity.

**§ 10.3.4** The Owner shall not be responsible under this Section 10.3 for materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

**§ 10.3.5** The Contractor shall indemnify the Owner for the cost and expense the Owner incurs (1) for remediation of a material or substance the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

**§ 10.3.6** If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall indemnify the Contractor for all cost and expense thereby incurred.

### **§ 10.4 Emergencies**

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

## **ARTICLE 11 INSURANCE AND BONDS**

### **§ 11.1 Contractor's Liability Insurance**

**§ 11.1.1** The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by



a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

- .1 Claims under workers' compensation, disability benefit and other similar employee benefit acts which are applicable to the Work to be performed;
- .2 Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;
- .3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;
- .4 Claims for damages insured by usual personal injury liability coverage;
- .5 Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;
- .6 Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle; and
- .7 Claims for bodily injury or property damage arising out of completed operations; and
- .8 Claims involving contractual liability insurance applicable to the Contractor's obligations under Section 3.18.

**§ 11.1.2** The insurance required by Section 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from the date of commencement of the Work until the date of final payment and termination of any coverage required to be maintained after final payment and, with respect to the Contractor's completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents.

**§ 11.1.3** Certificates of insurance acceptable to the Owner shall be submitted to the Construction Manager for transmittal to the Owner with a copy to the Architect prior to commencement of the Work and thereafter upon renewal or replacement of each required policy of insurance. These certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning reduction of coverage shall be furnished by the Contractor with reasonable promptness.

**§ 11.1.4** The Contractor shall cause the commercial liability coverage required by the Contract Documents to include (1) the Construction Manager, the Construction Manager's consultants, the Owner, the Architect, and the Architect's consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's completed operations.

## **§ 11.2 Owner's Liability Insurance**

The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance.

## **§ 11.3 Property Insurance**

**§ 11.3.1** Unless otherwise provided, the Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Section 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Section 11.3 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.

**§ 11.3.1.1** Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without

duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for the Architect's, Contractor's, and Construction Manager's services and expenses required as a result of such insured loss.

§ 11.3.1.2 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance that will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor in writing, then the Owner shall bear all reasonable costs properly attributable thereto.

§ 11.3.1.3 If the property insurance requires deductibles, the Owner shall pay costs not covered because of such deductibles.

§ 11.3.1.4 This property insurance shall cover portions of the Work stored off the site, and also portions of the Work in transit.

§ 11.3.1.5 Partial occupancy or use in accordance with Section 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

§ 11.3.2 **Boiler and Machinery Insurance.** The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Construction Manager, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds.

§ 11.3.3 **Loss of Use Insurance.** The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused.

§ 11.3.4 If the Contractor requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

§ 11.3.5 If during the Project construction period the Owner insures properties, real or personal or both, adjoining or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, the Owner shall waive all rights in accordance with the terms of Section 11.3.7 for damages caused by fire or other causes of loss covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

§ 11.3.6 Before an exposure to loss may occur, the Owner shall file with the Contractor a copy of each policy that includes insurance coverages required by this Section 11.3. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least 30 days' prior written notice has been given to the Contractor.

§ 11.3.7 **Waivers of Subrogation.** The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees each of the other, and (2) the Construction Manager, Architect, Architect's consultants, separate contractors described in Article 6, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other causes of loss to the extent covered by property insurance obtained pursuant to this Section 11.3 or other property insurance applicable to the Work,

except such rights as the Owner and Contractor may have to the proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Construction Manager, Construction Manager's consultants, Architect, Architect's consultants, Owner's separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

**§ 11.3.8** A loss insured under the Owner's property insurance shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.3.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

**§ 11.3.9** If required in writing by a party in interest, the Owner as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Owner's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Owner shall deposit in a separate account proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach, or as determined in accordance with the method of binding dispute resolution selected in the Agreement between the Owner and Contractor. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article 7.

**§ 11.3.10** The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner's exercise of this power; if such objection is made, the dispute shall be resolved in the manner selected by the Owner and Contractor as the method of binding dispute resolution in the Agreement. If the Owner and Contractor have selected arbitration as the method of binding dispute resolution, the Owner as fiduciary shall make settlement with insurers or distribution of insurance proceeds in accordance with the direction of the arbitrators.

#### **§ 11.4 Performance Bond and Payment Bond**

**§ 11.4.1** The Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract.

**§ 11.4.2** Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

### **ARTICLE 12 UNCOVERING AND CORRECTION OF WORK**

#### **§ 12.1 Uncovering of Work**

**§ 12.1.1** If a portion of the Work is covered contrary to the Construction Manager's or Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by either, be uncovered for their observation and be replaced at the Contractor's expense without change in the Contract Time.

**§ 12.1.2** If a portion of the Work has been covered which the Construction Manager or Architect has not specifically requested to observe prior to its being covered, the Construction Manager or Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, such costs and the cost of correction shall be at the Contractor's expense unless the condition was caused by the Owner or one of the other Contractors in which event the Owner shall be responsible for payment of such costs.



## **§ 12.2 Correction of Work**

### **§ 12.2.1 Before or After Substantial Completion**

The Contractor shall promptly correct Work rejected by the Construction Manager or Architect or failing to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Construction Manager's and Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

### **§ 12.2.2 After Substantial Completion**

**§ 12.2.2.1** In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof, or after the date for commencement of warranties established under Section 9.9.1, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.4.

**§ 12.2.2.2** The one-year period shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

**§ 12.2.2.3** The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

**§ 12.2.3** The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

**§ 12.2.4** The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors or other Multiple Prime Contractors caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

**§ 12.2.5** Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

### **§ 12.3 Acceptance of Nonconforming Work**

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

## **ARTICLE 13 MISCELLANEOUS PROVISIONS**

### **§ 13.1 Governing Law**

The Contract shall be governed by the law of the place where the Project is located except that, if the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

### **§ 13.2 Successors and Assigns**

**§ 13.2.1** The Owner and Contractor respectively bind themselves, their partners, successors, assigns and legal representatives to covenants, agreements and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the

other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

**§ 13.2.2** The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate such assignment.

### **§ 13.3 Written Notice**

Written notice shall be deemed to have been duly served if delivered in person to the individual, to a member of the firm or entity or to an officer of the corporation for which it was intended; or if delivered at or sent by registered or certified mail or by courier service providing proof of delivery to, the last business address known to the party giving notice.

### **§ 13.4 Rights and Remedies**

**§ 13.4.1** Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.

**§ 13.4.2** No action or failure to act by the Owner, Construction Manager, Architect or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed in writing.

### **§ 13.5 Tests and Inspections**

**§ 13.5.1** Tests, inspections and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall give the Construction Manager and Architect timely notice of when and where tests and inspections are to be made so that the Construction Manager and Architect may be present for such procedures. The Owner shall bear costs of (1) tests, inspections or approvals that do not become requirements until after bids are received or negotiations concluded, and (2) tests, inspections or approvals where building codes or applicable laws or regulations prohibit the Owner from delegating their cost to the Contractor.

**§ 13.5.2** If the Construction Manager, Architect, Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Section 13.5.1, the Construction Manager and Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Construction Manager and Architect of when and where tests and inspections are to be made so that the Construction Manager and Architect may be present for such procedures. Such costs except as provided in Section 13.5.3, shall be at the Owner's expense.

**§ 13.5.3** If such procedures for testing, inspection or approval under Sections 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure including those of repeated procedures and compensation for the Construction Manager's and Architect's services and expenses shall be at the Contractor's expense.

**§ 13.5.4** Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Construction Manager for transmittal to the Architect.

**§ 13.5.5** If the Construction Manager or Architect is to observe tests, inspections or approvals required by the Contract Documents, the Construction Manager or Architect will do so promptly and, where practicable, at the normal place of testing.

**§ 13.5.6** Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

### § 13.6 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as the parties may agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

### § 13.7 Time Limits on Claims

The Owner and the Contractor shall commence all claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the other arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in the Agreement within the time period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and the Contractor waive all claims and causes of action not commenced in accordance with this Section 13.7.

## ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

### § 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, for any of the following reasons:

- .1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2 An act of government, such as a declaration of national emergency that requires all Work to be stopped;
- .3 Because the Construction Manager has not certified or the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- .4 The Owner has failed to furnish to the Contractor promptly, upon the Contractor's request, reasonable evidence as required by Section 2.2.1.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, repeated suspensions, delays or interruptions of the entire Work by the Owner as described in Section 14.3 constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' written notice to the Owner, Construction Manager and Architect, terminate the Contract and recover from the Owner payment for Work executed including reasonable overhead and profit, costs incurred by reason of such termination, and damages.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' written notice to the Owner, Construction Manager and Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

### § 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- .1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;
- .3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the above reasons exist, the Owner, after consultation with the Construction Manager, and upon certification by the Initial Decision Maker that sufficient cause exists to justify such action, may without

prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

**§ 14.2.3** When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

**§ 14.2.4** If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Construction Manager's and Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall, upon application, be certified by the Initial Decision Maker after consultation with the Construction Manager, and this obligation for payment shall survive termination of the Contract.

### **§ 14.3 Suspension by the Owner for Convenience**

**§ 14.3.1** The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as the Owner may determine.

**§ 14.3.2** The Contract Sum and the Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay or interruption as described in Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent:

- .1 that performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of this Contract.

### **§ 14.4 Termination by the Owner for Convenience**

**§ 14.4.1** The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

**§ 14.4.2** Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

**§ 14.4.3** In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination, along with reasonable overhead and profit on the Work not executed.

## **ARTICLE 15 CLAIMS AND DISPUTES**

### **§ 15.1 Claims**

**§ 15.1.1 Definition.** A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim.

**§ 15.1.2 Notice of Claims.** Claims by either the Owner or Contractor must be initiated by written notice to the other party and to the Initial Decision Maker with a copy sent to the Construction Manager and Architect, if the Construction Manager and or Architect is not serving as the Initial Decision Maker. Claims by either party must be

initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

**§ 15.1.3 Continuing Contract Performance.** Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents. The Construction Manager will prepare Change Orders and the Architect will issue a Certificate for Payment or Project Certificate for Payment in accordance with the decisions of the Initial Decision Maker.

**§ 15.1.4 Claims for Additional Cost.** If the Contractor wishes to make a Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.3.

**§ 15.1.5 Claims for Additional Time**

**§ 15.1.5.1** If the Contractor wishes to make a Claim for an increase in the Contract Time, written notice as provided herein shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay only one Claim is necessary.

**§ 15.1.5.2** If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.

**§ 15.1.6 Claims for Consequential Damages.** The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.6 shall be deemed to preclude an award of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

**§ 15.2 Initial Decision**

**§ 15.2.1** Claims, excluding those arising under Sections 10.3, 10.4, 11.3.9, and 11.3.10, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Initial Decision Maker with no decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

**§ 15.2.2** The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

**§ 15.2.3** In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.



**§ 15.2.4** If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of such request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

**§ 15.2.5** The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect and Construction Manager, if the Architect or Construction Manager is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

**§ 15.2.6** Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

**§ 15.2.6.1** Either party may, within 30 days from the date of an initial decision, demand in writing that the other party file for mediation within 60 days of the initial decision. If such a demand is made and the party receiving the demand fails to file for mediation within the time required, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

**§ 15.2.7** In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

**§ 15.2.8** If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

### **§ 15.3 Mediation**

**§ 15.3.1** Claims, disputes, or other matters in controversy arising out of or related to the Contract except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.6 shall be subject to mediation as a condition precedent to binding dispute resolution.

**§ 15.3.2** The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

**§ 15.3.3** The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

### **§ 15.4 Arbitration**

**§ 15.4.1** If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

**§ 15.4.1.1** A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based

on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

**§ 15.4.2** The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

**§ 15.4.3** The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

**§ 15.4.4 Consolidation or Joinder**

**§ 15.4.4.1** Either party, at its sole discretion, may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

**§ 15.4.4.2** Either party, at its sole discretion, may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

**§ 15.4.4.3** The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as the Owner and Contractor under this Agreement.

**SECTION 007300 - SUPPLEMENTARY GENERAL CONDITIONS A232-2009**

The following supplements modify the "General Conditions of the Contract for Construction," AIA Document A232-2009. Where a portion of the General Conditions is modified or deleted by the Supplementary Conditions, the unaltered portions of the General Conditions shall remain in effect.

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## **ARTICLE 1: GENERAL PROVISIONS**

### **1.1 BASIC DEFINITIONS**

#### **1.1.1 THE CONTRACT DOCUMENTS**

Delete the last sentence in its entirety and replace with the following:

“The Contract Documents also include Advertisement for Bid, Instructions to Bidder, sample forms, the Bid Form, the Contractor's completed Bid and the Award Letter.”

### **1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS**

Add the following Paragraphs:

1.2.4 In the case of an inconsistency between the Drawings and the Specifications, or within either document not clarified by addendum, the better quality or greater quantity of work shall be provided in accordance with the Architect's interpretation.

1.2.5 The word “PROVIDE” as used in the Contract Documents shall mean “FURNISH AND INSTALL” and shall include, without limitation, all labor, materials, equipment, transportation, services and other items required to complete the Work.

1.2.6 The word “PRODUCT” as used in the Contract Documents means all materials, systems and equipment.

### **1.5 OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS AND OTHER INSTRUMENTS OF SERVICE**

Delete Paragraph 1.5.1 in its entirety and replace with the following:

“All pre-design studies, drawings, specifications and other documents, including those in electronic form, prepared by the Architect under this Agreement are, and shall remain, the property of the Owner whether the Project for which they are made is executed or not. Such documents may be used by the Owner to construct one or more like Projects without the approval of, or additional compensation to, the Architect. The Contractor, Subcontractors, Sub-subcontractors and Material or Equipment Suppliers are authorized to use and reproduce applicable portions of the Drawings, Specifications and other documents prepared by the Architect and the Architect's consultants appropriate to and for use in the execution of their Work under the Contract Documents. They are not to be used by the Contractor or any Subcontractor, Sub-subcontractor or Material and Equipment Supplier on other Projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect and Architect's consultants.

The Architect shall not be liable for injury or damage resulting from the re-use of drawings and specifications if the Architect is not involved in the re-use Project. .”

Delete Paragraph 1.5.2 in its entirety.

## **ARTICLE 2: OWNER**

### **2.1 General**

2.1.2 Delete Paragraph 2.1.2 in its entirety.

### **2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER**

2.2.1 Delete the last sentence in this paragraph.

2.2.3 Add the following sentence:

“The Contractor, at their expense shall bear the costs to accurately identify the location of all underground utilities in the area of their excavation and shall bear all cost for any repairs required, out of failure to accurately identify said utilities.”

2.2.5 Delete Subparagraph 2.2.5 in its entirety and substitute the following:

2.2.5 The Contractor shall be furnished free of charge up to five (5) sets of the Drawings and Project Manuals. Additional sets will be furnished at the cost of reproduction, postage and handling.

## **ARTICLE 3: CONTRACTOR**

### **3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR**

Delete the third sentence in Paragraph 3.2.4.

### **3.3 SUPERVISION AND CONSTRUCTION PROCEDURES**

Add the following Paragraphs:

3.3.2.1 The Contractor shall immediately remove from the Work, whenever requested to do so by the Owner, any person who is considered by the Owner or Architect to be incompetent or disposed to be disorderly, or who for any reason is not satisfactory to the Owner, and that person shall not again be employed on the Work without the consent of the Owner or the Architect.

3.3.4 The Contractor must provide suitable storage facilities at the Site for the proper protection and safe storage of their materials. Consult the Owner and the Architect before storing any materials.

3.3.5 When any room is used as a shop, storeroom, office, etc., by the Contractor or Subcontractor(s) during the construction of the Work, the Contractor making use of these areas will be held responsible for any repairs, patching or cleaning arising from such use.

### **3.4 LABOR AND MATERIALS**

Add the Following Paragraphs:

3.4.4 Before starting the Work, each Contractor shall carefully examine all preparatory Work that has been executed to receive their Work. Check carefully, by whatever means are required, to insure that its Work and adjacent, related Work, will finish to proper contours, planes and levels. Promptly notify

the General Contractor/Construction Manager of any defects or imperfections in preparatory Work which will in any way affect satisfactory completion of its Work. Absence of such notification will be construed as an acceptance of preparatory Work and later claims of defects will not be recognized.

- 3.4.5 Under no circumstances shall the Contractor's Work proceed prior to preparatory Work having been completely cured, dried and/or otherwise made satisfactory to receive this Work. Responsibility for timely installation of all materials rests solely with the Contractor responsible for that Work, who shall maintain coordination at all times.

### 3.5 WARRANTY

Add the following Paragraphs:

- 3.5.1 The Contractor will warrant all materials and workmanship against original defects, except injury from proper and usual wear when used for the purpose intended, for (2) two years after Acceptance by the Owner, and will maintain all items in condition that conforms with the Contract Documents during the period of warranty.
- 3.5.2 Non-conforming work during the period of warranty will be corrected by the Contractor at its expense upon demand of the Owner, it being required that the Work conforms to the Contract Documents at the expiration of the warranty period.
- 3.5.3 In addition to the General Warranty there are other warranties required for certain items for different periods of time than the (2) two years as above, and are particularly so stated in that part of the specifications referring to same. The said warranties will commence at the same time as the General Warranty.
- 3.5.4 If the Contractor fails to remedy any failure, defect or damage within a reasonable time after receipt of notice, the Owner will have the right to replace, repair, or otherwise remedy the failure, defect or damage at the Contractor's expense.

### 3.11 DOCUMENTS AND SAMPLES AT THE SITE

Add the following Paragraphs:

- 3.11.1 During the course of the Work, the Contractor shall maintain a record set of drawings on which the Contractor shall mark the actual physical location of all piping, valves, equipment, conduit, outlets, access panels, controls, actuators, including all appurtenances that will be concealed once construction is complete, etc., including all invert elevations.
- 3.11.2 At the completion of the project, the Contractor shall obtain a set of reproducible drawings from the Architect, and neatly transfer all information outlined in 3.11.1 to provide a complete record of the as-built conditions.
- 3.11.3 The Contractor shall provide two (2) prints of the as-built conditions, along with the reproducible drawings themselves, to the Owner and one (1) set to the Architect. In addition, attach one complete set to each of the Operating and Maintenance Instructions/Manuals.

3.17 In the second sentence of the paragraph, insert “indemnify and” between “shall” and “hold”.

#### **ARTICLE 4: ARCHITECT AND CONSTRUCTION MANAGER**

##### **4.1 General**

4.1.2 Insert “As required by law,” at the beginning of the first sentence.

##### **4.2 Administration of the Contract**

Delete the first sentence of Paragraph 4.2.10 and replace with the following:

The Architect will review and approve or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data and Samples for the purpose of checking for conformance with the Contract Documents.

Delete the second sentence of Paragraph 4.2.10 and replace with the following:

The Architect's action will be taken with such reasonable promptness as to cause no delay in the Work in the activities of the Owner, Contractor or separate Contractors, while allowing sufficient time in the Owner's professional judgment to permit adequate review.

Add the following to Paragraph 4.2.16:

There will be no full-time project representative provided by the Owner or Architect on this project.

Add to Paragraph 4.2.19 “and in compliance with all applicable codes, regulations and ordinances.” to the end of the sentence.

#### **ARTICLE 5: SUBCONTRACTORS**

##### **5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK**

Delete Paragraph 5.2.3 in its entirety and replace with the following:

5.2.3 If the Owner, Architect or Construction Manager has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner, Architect or Construction Manager has no reasonable objection, subject to the statutory requirements of 29 Delaware Code § 6962(d)(10)b.3 and 4.

#### **ARTICLE 6: CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS**

##### **6.1 OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS**

Delete Paragraph 6.1.3 in its entirety and replace with the following:

“When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term “Contractor” in the Contract Documents in

each case shall mean the Constructor who executes each separate Owner-Contractor Agreement.”

6.2 MUTUAL RESPONSIBILITY

6.2.3 In the second sentence, strike the word “shall” and insert the word “may”.

**ARTICLE 7: CHANGES IN THE WORK**

(SEE ARTICLE 7: CHANGES IN WORK IN THE GENERAL REQUIREMENTS)

**ARTICLE 8: TIME**

8.2 PROGRESS AND COMPLETION

Add the following Paragraphs:

8.2.1.1 Refer to Specification Section SUMMARY OF WORK for Contract time requirements.

8.2.4 If the Work falls behind the Progress Schedule as submitted by the Contractor, the Contractor shall employ additional labor and/or equipment necessary to bring the Work into compliance with the Progress Schedule at no additional cost to the Owner.

8.3 DELAYS AND EXTENSION OF TIME

8.3.1 Strike “arbitration” and insert “remedies at law or in equity”.

Add the following Paragraph:

8.3.2.1 The Contractor shall update the status of the suspension, delay, or interruption of the Work with each Application for Payment. (The Contractor shall report the termination of such cause immediately upon the termination thereof.) Failure to comply with this procedure shall constitute a waiver for any claim for adjustment of time or price based upon said cause.

Delete Paragraph 8.3.3 in its entirety and replace with the following:

8.3.3 Except in the case of a suspension of the Work directed by the Owner, an extension of time under the provisions of Paragraph 8.3.1 shall be the Contractor’s sole remedy in the progress of the Work and there shall be no payment or compensation to the Contractor for any expense or damage resulting from the delay.

Add the following Paragraph:

8.3.4 By permitting the Contractor to work after the expired time for completion of the project, the Owner does not waive its rights under the Contract.

8.3.5 The parties agree that Paragraph 8.3.3 of the Supplementary General Conditions does not apply to the Construction Manager in the event of a delay caused by a party other than the Construction Manager.

## **ARTICLE 9: PAYMENTS AND COMPLETION**

### **9.2 SCHEDULE OF VALUES**

Add the following Paragraphs:

- 9.2.1 The Schedule of Values shall be submitted using AIA Document G702, Continuation Sheet to G703.

### **9.3 APPLICATIONS FOR PAYMENT**

Add the following Paragraph:

- 9.3.1.3 Application for Payment shall be submitted on AIA Document G702 "Application and Certificate for Payment", supported by AIA Document G703 "Continuation Sheet". Said Applications shall be fully executed and notarized.

Add the following Paragraphs:

- 9.3.4 Until Closeout Documents have been received and outstanding items completed the Owner will pay 95% (ninety-five percent) of the amount due the Contractor on account of progress payments.

- 9.3.5 The Contractor shall provide a current and updated Progress Schedule to the Architect with each Application for Payment. Failure to provide Schedule will be just cause for rejection of Application for Payment.

### **9.5 DECISIONS TO WITHHOLD CERTIFICATION**

Add the following to 9.5.1:

- .8 failure to provide a current Progress Schedule;
- .9 a lien or attachment is filed;
- .10 failure to comply with mandatory requirements for maintaining Record Documents.

### **9.6 PROGRESS PAYMENTS**

Delete Paragraph 9.6.1 in its entirety and replace with the following:

- 9.6.1 After the Architect and the Construction Manager have approved and issued a Certificate for Payment, payment shall be made by the Owner within 30 days after Owner's receipt of the Certificate for Payment.

### **9.7 FAILURE OF PAYMENT**

In first sentence, strike the first reference to "seven" and insert "thirty (30)". Also strike "binding dispute resolution" and insert "remedies at law or in equity".

### **9.8 SUBSTANTIAL COMPLETION**

- 9.8.5 In the second sentence, strike "shall" and insert "may".

## **ARTICLE 10: PROTECTION OF PERSONS AND PROPERTY**

10.1 SAFETY PRECAUTIONS AND PROGRAMS

Add the following Paragraphs:

10.1.1 Each Contractor shall develop a safety program in accordance with the Occupational Safety and Health Act of 1970. A copy of said plan shall be furnished to the Owner and Architect prior to the commencement of that Contractor's Work.

10.1.2 Each Contractor shall appoint a Safety Representative. Safety Representatives shall be someone who is on site on a full time basis. If deemed necessary by the Owner or Architect, Contractor Safety meetings will be scheduled. The attendance of all Safety Representatives will be required. Minutes will be recorded of said meetings by the Contractor and will be distributed to all parties as well as posted in all job offices/trailers etc.

10.2 SAFETY OF PERSONS AND PROPERTY

Add the following Paragraph:

10.2.4.1 As required in the Hazardous Chemical Act of June 1984, all vendors supplying any material that may be defined as hazardous must provide Material Safety Data Sheets for those products. Any chemical product should be considered hazardous if it has a caution warning on the label relating to a potential physical or health hazard, if it is known to be present in the work place, and if employees may be exposed under normal conditions or in foreseeable emergency situations. Material Safety Data Sheets shall be provided directly to the Owner, along with the shipping slips that include those products.

10.3 HAZARDOUS MATERIALS

Delete Paragraph 10.3.3 in its entirety.

Delete Paragraphs 10.3.6 in its entirety.

**ARTICLE 11: INSURANCE AND BONDS**

11.1 CONTRACTOR'S LIABILITY INSURANCE

11.1.4 Strike "the Owner" immediately following "(1)" and strike "and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's completed operations."

11.2 OWNER'S LIABILITY INSURANCE

Delete Paragraph 11.2 in its entirety.

11.3 PROPERTY INSURANCE

Delete Paragraph 11.3 and its subparagraphs in their entirety and replace with the following:

11.3 The Owner will not provide Builder's All Risk Insurance for the Project. The Contractor and all Subcontractors shall provide property coverage for their tools and equipment, as necessary. Any mandatory deductible required by the Contractor's Insurance shall be the responsibility of the Contractor.

11.4 PERFORMANCE BOND AND PAYMENT BOND

11.4.1 Add the following sentence: "The bonds will conform to those forms approved by the Office of Management and Budget."

**ARTICLE 12: UNCOVERING AND CORRECTION OF WORK**

12.2.2 AFTER SUBSTANTIAL COMPLETION

Add the following Paragraph:

12.2.2.1.1 At any time during the progress of the Work, or in any case where the nature of the defects will be such that it is not expedient to have corrected, the Owner, at its option, will have the right to deduct such sum, or sums, of money from the amount of the Contract as it considers justified to adjust the difference in value between the defective work and that required under contract including any damage to the structure.

12.2.2.2 Strike "one" and insert "two".

12.2.2.3 Strike "one" and insert "two".

12.2.5 In second sentence, strike "one" and insert "two".

**ARTICLE 13: MISCELLANEOUS PROVISIONS**

13.1 GOVERNING LAW

Strike "except that, if the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4."

Insert "except that, if the parties have selected arbitration as the method of dispute resolution, the Delaware Arbitration Act, 10 Del. C. §5701, shall govern Section 15.4."

13.6 INTEREST

Strike "the date payment is due at such rate as the parties may agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located." Insert "30 days of presentment of the authorized Certificate of Payment at the annual rate of 12% or 1% per month.

13.7 TIME LIMITS ON CLAIMS

Strike the last sentence.

Add the following Paragraph:

13.8 CONFLICTS WITH FEDERAL STATUTES OR REGULATIONS

13.8.1 If any provision, specifications or requirement of the Contract Documents conflict or is inconsistent with any statute, law or regulation of the government of the United State of America, the Contractor shall notify the Architect and Owner immediately upon discovery.



**ARTICLE 14: TERMINATION OR SUSPENSION OF THE CONTRACT**

**14.4 TERMINATION BY THE OWNER FOR CONVENIENCE**

Delete Paragraph 14.4.3 in its entirety and replace with the following:

- 14.4.3 In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for Work executed, and cost incurred by reason of such termination along with reasonable overhead.

**ARTICLE 15: CLAIMS AND DISPUTES**

**15.1.6 CLAIMS FOR CONSEQUENTIAL DAMAGES**

Delete Paragraph 15.1.6 and its subparagraphs in their entirety.

**15.2 INITIAL DECISION**

Delete Paragraph 15.2.5 in its entirety and replace with the following:

- 15.2.5 The Architect will approve or reject Claims by written decision, which shall state the reasons therefore and shall notify the parties of any change in the Contract Sum or Contract Time or both. The approval or rejection of a Claim by the Architect shall be subject to mediation and other remedies at law or in equity.

Delete Paragraph 15.2.6 and its subparagraphs in their entirety.

**15.3 MEDIATION**

- 15.3.1 Strike "binding dispute resolution" and insert "any or all remedies at law or in equity".

15.3.2 In the first sentence, delete "administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedure in effect on the date of the Agreement,". Also strike "binding dispute resolution" and insert "remedies at law and in equity".

**15.4 ARBITRATION**

Delete Paragraph 15.4 and its subparagraphs in their entirety.

**END OF SUPPLEMENTARY GENERAL CONDITIONS**

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SECTION 007343 – WAGE RATE REQUIREMENTS

1. SUMMARY

- A. In accordance with Delaware Code, Title 29, Chapter 69, Section 6912, all laborers and mechanics of the Contractor and all subcontractors employed to perform work directly upon the site of the work shall be paid unconditionally and not less often than once a week and without subsequent deduction or rebate on any account the full amounts accrued at the time of payment computed at wage rates not less than those determined by the Division of Industrial Affairs, Department of Labor, State of Delaware, as the prevailing rates in this area.
- B. This approved scale of wages must be posted by the Contractor in a prominent and easily accessible place at the site of the work.
- C. It is further stipulated that there may be withheld from the Contractor such accrued payment as may be considered necessary by the contracting officer to pay laborers and mechanics employed by the Contractor or any subcontractors on the work the difference between the rates of wages required and the rate of wages received by such laborers and mechanics and not refunded to the Contractor, subcontractor or their agents.
- D. Where wage rates are published in this Manual they are issued by the State Department of Labor on the date indicated and are included for the convenience of Bidders. The Owner, the Architect, and the Construction Manager, accept no responsibility for the accuracy or applicability of any rates included herein. The actual wage rate determinations which will apply to the work will be those in effect on the first day of public advertisement for bids as determined by the State Department of Labor. It will be the responsibility of each bidder to contact the State Department of Labor and to incorporate these rates in his bid.
- E. "In accordance with Delaware Code, Title 29, Section 6912, as amended July 5, 1994, contractors shall furnish sworn payroll information to the Department of Labor on a weekly basis for each contract which exceeds \$15,000 for renovation work and \$100,000 for new construction. The construction contract amount is based on a cumulative total of all contracts bid for a specific project. Payroll forms for submission may be obtained from the Department of Labor."
  - 1. A Payroll Report, available from the Department of Labor is to be used to provide this information.
- F. A copy of the Prevailing Wages for the project is attached hereto.

END OF SECTION



STATE OF DELAWARE  
DEPARTMENT OF LABOR  
DIVISION OF INDUSTRIAL AFFAIRS  
4425 NORTH MARKET STREET  
WILMINGTON, DELAWARE 19802

TELEPHONE (302) 761-8200  
FAX (302) 761-6601

**Via Electronic and Regular Mail**

October 26, 2017

Mr. Andrew Hickey  
Senior Project Manager  
Edis Company  
110 S. Poplar Street  
Suite 400  
Wilmington, DE 19805

Re: ASD - Fairview Campus New Middle School and High School New Castle County DE

Dear Mr. Hickey:

I am responding to your request for a category determination for the Appoquinimink School District - Fairview Campus New Middle School and High School, which is a state funded construction project located in New Castle County, DE. The work consists of Construct new middle school performing arts center and high school at the ASD Fairview campus (235,763 sf footprint) Construct new outlying buildings (field house, maintenance facility, greenhouse). You estimate the total cost of construction for this project to

Based upon the information you provided the Department of Labor has determined that this project is a Building Construction project.

Delaware's Prevailing Wage Regulations provide that the rates applicable to a project are the rates in effect on the date of publication of the specifications for that project. I have enclosed a certified copy of the March 15, 2017, prevailing wage rates for Building Construction to be included in your bid specification. However, please be advised that, in the event that a contract for a project is not executed within one hundred and twenty (120) days from the earliest date the specifications were published, the rates in effect at the time of the execution of the contract shall be the applicable rates for the project.

This determination is directed solely to the parties identified herein. It is based on the unique facts relevant to this matter. It does not constitute precedent and should not be cited as such by future parties.

Lastly, please see the enclosed debarment list. Entities/individuals listed shall not be permitted to bid on, be awarded or work on Delaware State funded construction projects, in the timeframe specified, as provided for under 29 Del.C. §6960 or other applicable State statutes.

If you have any questions or I can provide any additional assistance, please do not hesitate to contact me at 302 761 8326.

Sincerely  
*Michael Hopkins*  
Michael Hopkins  
Labor Law Enforcement Officer  
Michael.Hopkins@state.de.us

Enclosures

STATE OF DELAWARE  
DEPARTMENT OF LABOR  
DIVISION OF INDUSTRIAL AFFAIRS  
OFFICE OF LABOR LAW ENFORCEMENT  
PHONE: (302) 451-3423

Mailing Address:  
4425 North Market St. 3rd FL  
Wilmington, DE 19802

Located at:  
4425 North Market St. 3rd FL  
Wilmington, DE 19802

PREVAILING WAGES FOR BUILDING CONSTRUCTION EFFECTIVE MARCH 15, 2017

CLASSIFICATION	NEW CASTLE	KENT	SUSSEX
ASBESTOS WORKERS	22.86	28.16	40.98
BOILERMAKERS	68.44	34.72	51.05
BRICKLAYERS	51.99	51.99	51.99
CARPENTERS	53.81	53.81	42.77
CEMENT FINISHERS	72.28	46.71	22.17
ELECTRICAL LINE WORKERS	45.47	38.99	29.73
ELECTRICIANS	66.85	66.85	66.85
ELEVATOR CONSTRUCTORS	90.49	64.49	31.94
GLAZIERS	71.20	71.20	56.66
INSULATORS	55.48	55.48	55.48
IRON WORKERS	62.85	62.85	62.85
LABORERS	44.70	44.70	44.70
MILLWRIGHTS	69.18	69.18	55.75
PAINTERS	48.47	48.47	48.47
PILEDRIERS	75.27	39.35	31.83
PLASTERERS	29.84	29.84	22.12
PLUMBERS/PIPEFITTERS/STEAMFITTERS	65.95	51.49	57.01
POWER EQUIPMENT OPERATORS	67.29	67.29	43.83
ROOFERS-COMPOSITION	24.01	23.70	21.64
ROOFERS-SHINGLE/SLATE/TILE	18.39	21.86	17.19
SHEET METAL WORKERS	67.03	67.03	67.03
SOFT FLOOR LAYERS	51.12	51.12	51.12
SPRINKLER FITTERS	57.29	57.29	57.29
TERRAZZO/MARBLE/TILE FNRS	57.72	57.72	47.51
TERRAZZO/MARBLE/TILE STRS	66.02	66.02	55.02
TRUCK DRIVERS	28.75	27.44	20.94

CERTIFIED: 10/27/17

BY: 

ADMINISTRATOR, OFFICE OF LABOR LAW ENFORCEMENT

**NOTE:** THESE RATES ARE PROMULGATED AND ENFORCED PURSUANT TO THE PREVAILING WAGE REGULATIONS ADOPTED BY THE DEPARTMENT OF LABOR ON APRIL 3, 1992.

CLASSIFICATIONS OF WORKERS ARE DETERMINED BY THE DEPARTMENT OF LABOR. FOR ASSISTANCE IN CLASSIFYING WORKERS, OR FOR A COPY OF THE REGULATIONS OR CLASSIFICATIONS, PHONE (302)

NON-REGISTERED APPRENTICES MUST BE PAID THE MECHANIC'S RATE.

**PROJECT:** Appoquinimink School District - Fairview Campus New Middle School and High School , New Castle County

SECTION 008114 – DRUG TESTING FORMS

1. SUMMARY

- A. Pursuant to 4104 Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on Large Public Works Projects requires that Contractors and Subcontractors who work on Large Public Works Contracts funded all or in part with public funds submit Testing Report Forms to the Owner no less than quarterly. See the form attached hereto.
- B. The Contractor will notify the Owner in writing of any positive results of random drug testing. See the form attached hereto. The results must be reported to the Owner within 24 hours of receipt of the test results.

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**EMPLOYEE DRUG TESTING REPORT FORM**

**Period Ending:**\_\_\_\_\_

4104 Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on Large Public Works Projects requires that Contractors and Subcontractors who work on Large Public Works Contracts funded all or in part with public funds submit Testing Report Forms to the Owner no less than quarterly.

Project Number: \_\_\_\_\_

Project Name: \_\_\_\_\_

Contractor/Subcontractor Name: \_\_\_\_\_

Contractor/Subcontractor Address: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Number of employees who worked on the jobsite during the report period: \_\_\_\_\_

Number of employees subject to random testing during the report period: \_\_\_\_\_

Number of Negative Results \_\_\_\_\_ Number of Positive Results \_\_\_\_\_

Action taken on employee(s) in response to a failed or positive random test:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Authorized Representative of Contractor/Subcontractor: \_\_\_\_\_

(typed or printed)

Authorized Representative of Contractor/Subcontractor: \_\_\_\_\_

(signature)

Date: \_\_\_\_\_

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**EMPLOYEE DRUG TESTING  
REPORT OF POSITIVE RESULTS**

4104 Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on Large Public Works Projects requires that Contractors and Subcontractors who work on Large Public Works Contracts funded all or in part with public funds to notify the Owner in writing of a positive random drug test.

Project Number: \_\_\_\_\_

Project Name: \_\_\_\_\_

Contractor/Subcontractor Name: \_\_\_\_\_

Contractor/Subcontractor Address: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Name of employee with positive test result: \_\_\_\_\_

Last 4 digits of employee SSN: \_\_\_\_\_

Date test results received: \_\_\_\_\_

Action taken on employee in response to a positive test result:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Authorized Representative of Contractor/Subcontractor: \_\_\_\_\_  
(typed or printed)

Authorized Representative of Contractor/Subcontractor: \_\_\_\_\_  
(signature)

Date: \_\_\_\_\_

**This form shall be sent by mail to the Owner within 24 hours of receipt of test results.**

**Enclose this test results form in a sealed envelope with the notation "Drug Testing Form – DO NOT OPEN" on the face thereof and place in a separate mailing envelope.**

END OF SECTION

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SECTION 011100 - SUMMARY OF WORK

1. RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Sections, apply to work of this Section.

2. CONTRACTS

- A. The work will be performed under separate prime contracts managed by the Construction Manager.

3. ALTERATIONS & COORDINATION

- A. Contractor shall be responsible to coordinate their work with the work of others, including, but not limited to, the preparation of general coordination drawings, diagrams and schedules, and control of site utilization, from the beginning of activity, through project close-out and warranty periods.

4. KNOWLEDGE OF CONTRACT REQUIREMENTS

- A. The Contractor and his Subcontractors, Sub-subcontractors and material men shall consult in detail the Contract Documents for instructions and requirements pertaining to the Work, and at his and their cost, shall provide all labor, materials, equipment and services necessary to furnish, install and complete the work in strict conformance with all provisions thereof.
- B. The Contractor will be held to have examined the site of the Work prior to submitting his proposal and informed himself, his Subcontractors, Sub-subcontractors and material men of all existing conditions affecting the execution of the Work.
- C. The Contractor will be held to have examined the Contract Documents and modifications thereto, as they may affect subdivisions of the Work and informed himself, his Subcontractors, Sub-subcontractors and material men of all conditions thereof affecting the execution of the Work.
- D. The Scope of Work for the Contract is not necessarily limited to the description of each section of the Specifications and the illustrations shown on the Drawings. Include all minor items not expressly indicated in the Contract Documents, or as might be found necessary as a result of field conditions, in order to complete the Work as it is intended, without any gaps between the various subdivisions of work.
- E. The Contractor will be held to be thoroughly familiar with all conditions affecting labor in the area of the Project including, but not limited to, Unions, incentive pay, procurements, living, parking and commuting conditions and to have informed his



Subcontractors and Sub-subcontractors thereof.

5. CONTRACT DOCUMENTS INFORMATION

- A. The Contract Documents are prepared in accordance with available information as to existing conditions and locations. If, during construction, conditions are revealed at variance with the Contract Documents, notify the Construction Manager immediately, but no more than three (3) days from the day the variance is first known. Failure to give timely notice shall operate to waive any claim Contractor might otherwise have for an adjustment to Contract Time or Sum as a consequence of such variance.
- B. The Specifications determine the kinds and methods of installation of the various materials, the Drawings establish the quantities, dimensions and details of materials, the schedules on the Drawings give the location, type and extent of the materials.
- C. Dimensions given on the Drawings govern scale measurements and large scale drawings govern small scale drawings, except as to anything omitted unless such omission is expressly noted on the large scale drawings.
- D. The techniques or methods of specifying to record requirements varies throughout text, and may include "prescriptive", "open generic/descriptive", "compliance with standards", "performance", "proprietary", or a combination of these. The methods used for specifying one unit of work has no bearing on requirements for another unit of work.
- E. Whenever a material, article or piece of equipment is referred to in the singular number in the Contract Documents, it shall be the same as referring to it in the plural. As many such materials, articles or pieces of equipment shall be provided as are required to complete the Work.
- F. Whenever a material, article or piece of equipment is specified by reference to a governmental, trade association of similar standard, it shall comply with the requirements of the latest publication thereof and amendments thereto in effect on the bid date.
- G. In addition to the requirements of the Contract Documents, Contractor's work shall also comply with applicable standards of the construction industry and those industry standards are made a part of Contract Documents by reference, as if copied directly into Contract Documents, or as if published copies were bound herein.
- H. Where compliance with two (2) or more industry standards, contract requirements, or sets of requirements is specified, and overlapping of those different standards or requirements establishes different or conflicting minimums or levels of quality, then the most stringent requirements, which are generally recognized to be also the most costly, is intended and will be enforced, unless specifically detailed language written into the Contract Documents clearly indicates that a less stringent requirement is to be fulfilled.

Refer apparently equal but different requirements, and uncertainties as to which level of quality is more stringent, to Architect for decision before proceeding.

- I. Reference standards referenced directly in Contract Documents or by governing regulations have precedence over non-reference standards which are recognized in industry for applicability of work.
- J. Contractor's bid is based on the complete set of Contract Documents including documents not specifically issued as part of the bid pack but referenced in same.

6. SCOPE OF WORK/GENERAL INFORMATION

- A. A Scope of Work for each contract to be awarded on the project follows in this section. When a Contract has been awarded to a Contractor, the successful Contractor will be listed after the title of the Contract. When no Contract has yet been awarded, no Contractor's name will be listed. Previous Scopes of Work include addendum changes.
- B. Contractor is responsible for performing the work listed in the Summary of Work for his contract. Contractor is also responsible for knowing the work that has been assigned to preceding contracts. No additional compensation or extension of time will be allowed a Contractor due to his ignorance of the work assigned to his Contract or to other contracts which may affect his work. The Contractor is responsible, however, for all items which are covered in the Specifications and Drawings relating to their Contract if not specifically mentioned in the Summary of Work.
- C. The Construction Manager will provide on-site a source for temporary electric, temporary water and portable sanitation facilities only. It is each Contractor's responsibility to make the necessary connections, including all material for temporary electric and water. Please note that utility charges for office trailers will be the responsibility of the individual Contractors.
- D. A dumpster will be provided on site for free use by Contractors to dispose of non-hazardous, common, work-related refuse. Clean-up is the responsibility of each Contractor. Clean up shall be performed on a daily basis. Contractors not complying will be advised in writing and back charged for all costs associated with the cleanup of their work.
- E. Contractors are reminded that there are limited storage areas available on site. Off-site storage will be the responsibility of each individual Contractor.
- F. Office trailer permits off site will be the responsibility of each individual Contractor. On site Contractor's field offices, one (1) per Contractor, if required, will be located as directed by the Construction Manager.
- G. Contractor will be prepared to discuss and submit a detailed project schedule seven (7)

days after receipt of Notice to Proceed and to begin its submittal process. The Project Schedule is an integral part of this contract. Certain construction sequences and priorities must take place in order to meet the target dates. Concentrated work periods will occur and each Contractor is responsible to staff the project as required by the current Construction Schedule or as directed by the Construction Manager. Contractor will cooperate with the Construction Manager in planning and meeting the required sequences of work and Project Schedule as periodically updated by the Construction Manager.

- H. All bids must include insurance limits in accordance with Article 11 of the Section 007300 SUPPLEMENTARY CONDITIONS.
- I. Hoisting, scaffolding and material handling is the responsibility of each Contractor, unless otherwise noted.
- J. Contractor will be responsible for layout of its own work. The Construction Manager will provide benchmark and layout of the building line.
- K. Contractor will be responsible to keep clean public roadways soiled by construction traffic on a daily basis. If cleaning is not done, the Construction Manager may perform the cleaning on an overtime basis and backcharge the Contractor responsible.
- L. Contractor Scopes of Work and Schedule are interrelated. Familiarity with each is required.
- M. The Construction Manager will provide testing services for soil, concrete and steel. Other testing as required by the Contract Documents will be in accordance with the technical specifications and/or the individual scope of work. Refer to Specification Section 004500 - QUALITY CONTROL.
- N. Safety is the responsibility of each individual Contractor. The project will be governed under the guidelines of OSHA.
- O. Inter-Contractor shop drawing distribution will be performed by the Construction Manager. Contractor is individually responsible for either coordinating his work with these distributed drawings or notifying the Construction Manager, in writing, of any discrepancies.
- P. Coordination with other trades will be required. The Contractor will be required to attend periodic coordination meetings with other trades where requirements, conflicts and coordination issues will be discussed and resolved. Attendance when requested will be mandatory. If inter-Contractor coordination is not satisfactorily performed, the conflicting Contractors shall mutually share the cost to relocate and/or reinstall their work.

- Q. Contractor shall submit a schedule of values to the Construction Manager prior to the submission of their first invoice for approval through Building Blok.
- R. Contractor is expected to review and coordinate its Work with the complete set of Contract Documents, including all items noted as by his trade whether or not shown on that particular set of drawings. Documents are available at the site for review.
- S. Contractor is responsible for obtaining all necessary permits required for his work, including street permits. Unless otherwise noted, building permit shall be secured by the Construction Manager. Any subcontractor who will be restricting access to street, right of way or adjacent property must notify the Construction Manager 48 hours in advance.
- T. Contractor's License: Submit a copy of all business licenses required by local and state agencies.
- U. Contractor shall absorb, without additional compensation, any and all costs of working beyond normal hours to maintain job progress in accordance with the current construction schedule.
- V. No asbestos or PCB's in or on any material or equipment will be accepted or allowed on this project. All hazardous materials will be treated in accordance with all State and Federal regulations.
- W. Daily cleanup of the work is the responsibility of each individual Contractor which includes broom cleaning of their debris as required. Contractor will be individually back charged by the Construction Manager for clean up not satisfactorily performed by the Contractor.
- X. In the event asbestos is uncovered, the Contractor shall notify the Construction Manager of the areas requiring removal of asbestos. The Construction Manager shall then coordinate the removal with the Owner.
- Y. This project is to be constructed adjacent to existing buildings. Contractor shall exercise all due precautions to minimize noise, air pollution and any other construction hazards which in any way would cause discomfort or danger to the occupants of the existing building in the area.
- Z. The Safety Cable System shall not be altered or removed without a written request submitted to the Project Manager with a copy to the Field Manager. It shall be the responsibility of each and every Contractor that is removing or altering the Safety Cable System to maintain the fall protection safety provided by the safety cable and not leave the area unprotected. Each and every Contractor shall be responsible to re-install the Safety Cable System immediately after work is completed. Each and every Contractor shall be responsible to re-install the Safety Cable System in accordance to OSHA standards.

- AA. Normal work hours for this project are from 7:00 a.m. to 3:30 p.m. Any work to be performed outside of these hours must receive prior approval from the Construction Manager. Requests to work beyond normal work hours shall be submitted at least 48 hours prior.
- AB. Contractor is responsible for having a competent project superintendent/foreman on-site during all work performed under its contract.
- AC. In the event the Contractor has non-English speaking employees or subcontractors on the project, they shall have a superintendent or foreman on site, at all times, who speaks English and can communicate with Contractor's employees. Should the Contractor fail to meet this requirement, at any time, Construction Manager may direct all Work to stop until the proper supervision is on site. The Contractor will be responsible for maintaining the project work schedule and make up at its own expense, any delay to the Schedule resulting from the work stoppage.
- AD. Punch List Procedures: Contractor shall be given a copy of the punch list with his appropriate work identified. Contractor shall have nine (9) calendar work days to complete its punch list work. On the 10th day or as determined by the Construction Manager, the Construction Manager shall employ other contractors, as required, to complete any incomplete punch list work and retain from the appropriate Contractors retainage all costs incurred.
- AE. Contractor shall provide the necessary safety barricades and railings required to complete their work and comply with all OSHA, local code and contract specifications.
- AF. Prohibition of Using Photographs on EDiS Projects: The Contractor and all associated subcontractors agrees to not issue any news release or advertising pertaining to the Work or the Project, including references to the Project on the Contractor's/subcontractor website or other social media outlets, without obtaining EDiS' prior written approval, in each instance. The Contractor, for itself, its employees, vendors and subcontractors, agrees to not use the name of the Owner, the Project, EDiS or any photographs, videos, or other images of the Project in connection with any of Contractor's business promotion activities, advertising, website, social media outlets, or operations, without EDiS' prior written approval in each instance.
- AG. Any contractors requesting use of the AutoCad version of the civil drawings must fill out and submit Landmark's Document Transmission Agreement, a copy of which is included at the end of this section.

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CONTRACT B-02 : SITEWORK

A. Work included in this contract consists of, but is not necessarily limited to, all labor, materials and equipment for:

- Technical Specification Sections:

Division 0	Bidding and Contract Requirements
Division 1	General Requirements
Section 033000	Cast-in-Place Concrete
Division 22	Plumbing
Division 31	Earthwork
Division 32	Exterior Improvements
Division 33	Utilities

This contract also includes, but is not necessarily limited to, all labor, materials and equipment for the following:

1. Provide sitework, storm (including catch basins and piping in open courtyards within school perimeter), sanitary and water utilities, concrete and asphalt paving, striping, curbs, signage, exterior concrete steps, walks and topsoil/seedling.
2. Provide fire supply piping including fire hydrants and loop. Color code fire hydrants as required by the local jurisdiction based upon water pressure. Provide fire lane striping including painting of adjacent curbs as required by local jurisdiction having authority.
3. Provide water supply piping and hose connections to athletic fields as shown on the drawings.
4. Provide site amenities (bollards, bike racks, flagpoles, manual and automatic gates, etc.). Include excavation and concrete to support these amenities as shown in the project documents and required by manufacturer's instructions.
5. Provide post and cable fencing. Chain link Fence associated with athletic fields (dugout, backstops, outfield) is to be provided under a separate contract.
6. This Contractor shall visit the site of the proposed work, fully acquaint and familiarize themselves with the conditions as they exist and the character of the operations to be carried out under the proposed Contract, and make such investigation as they may see fit so that they shall fully understand the facilities, physical conditions and restrictions affecting the work under the Contract. Claims for additional compensation and/or extensions of time because of Contractor's failure to familiarize themselves with all conditions which might affect the work shall not be allowed.
7. Maintain sediment control system including sediment control plan throughout the project

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- and remove at project completion. Sediment control measures were previously installed and maintained by Contract A-01. By submitting this bid, this contractor accepts the sediment control measures as-is. Requests for additional funds based upon the initial condition of the sediment control measures will not be entertained. Maintain sediment control until substantial completion established by DNREC.
8. Topsoil stripping and stockpiling on site as needed. Majority of topsoil has already been stripped and stockpiled by Contract A-01. This contractor is accepting topsoil stockpile as-is and is responsible for respreading and fertilizing/amending as required to establish new lawn areas.
  9. Contractors should carefully review the soil borings as they relate to the extent of rubble to be removed and other man made obstructions. Saw cutting and removal of sidewalks, curbs, etc. in the performance of work is this Contractor's responsibility.
  10. Sitework contractor is to provide rough grading for area defined on site drawings for building, lawn areas, bituminous roads, parking and walkways. Preparation of subgrade for slabs, walks, pavements, and athletic fields. The Concrete Contractor will be responsible for laying out all concrete work as shown on the structural and architectural drawings. The Sitework Contractor is to access the subgrade elevation of the building pads at the main buildings (High School, PAC, Middle School) and regrade the pad to provide a flat surface at 8" below the finish floor elevations prior to the start of foundation layout and installation in the sequence as detailed in the project schedule. This contractor is to establish and maintain the building pads at the outlying buildings. Written acceptance of the building pad condition will be provided by the concrete contractor before foundation work proceeds. Once the Concrete Contractor has accepted this work it will be the responsibility of the Concrete Contractor to maintain and dewater the building pad and all excavations until the concrete work is complete and backfilled. The Concrete Contractor, Pile Contractor, and Sitework Contractor are to coordinate this procedure so that there are no additional costs to the Owner for additional excavation or concrete. Spoils left after backfilling of foundations is complete are to be left outside the building perimeter by the concrete contractor and gathered by the sitework contractor and spread on site.
  11. The Sitework Contractor is responsible for the layout of bulk excavation at the outlying buildings (field house, green house, maintenance facility, etc.). The Sitework Contractor to extend the bulk excavation outside building plan in order to facilitate foundation construction and maintain safety requirements.
  12. Furnish, install and maintain select fill under slab at outlying buildings (field house, green house, maintenance facility).
  13. Provide subgrade at all fields, tennis courts, and play areas. Provide final spreading of topsoil, grading, seeding, and mulching of the athletic fields.
  14. Provide layout of this contract work from a licensed surveyor.

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15. The certified construction reviewer (CCR) will be provided by Landmark Science and Engineering, Inc.
  16. Provide all DelDOT permits related to work for this project.
  17. Remove/relocate utilities including, but not limited to the removal of light standards.
  18. Maintain and remove temporary site fencing, temporary roads and walks as shown on the site plan and described below. This contractor is to provide a curb cut for the temporary haul road off Tony Marchio Drive and to cut, excavate, and provide temporary paving through the existing median strip to allow for exiting truck traffic from the haul road. Provide an allowance, included in base bid, to provide, maintain and remove upon construction manager direction, a haul road totaling 4500' of stoned roadway, 20'-0" wide. Road shall consist of fabric, 10" of stone for the length of the road and the means to compact it. Include in this allowance, costs to mill and overlay the existing asphalt paved roads from the temporary haul road entrance/exit to Old State Road. Replace striping in this area to match the original.
  19. Furnish and install wash station, labor to wash tires, clean and drain the area as required before vehicles leave the site daily. Clean tires and tracks of all vehicles before leaving the construction site. Wash station will be utilized by other contractors and will be removed only when directed by EDiS. Furnish and install Non-freeze Hose Bib, water line, valve box & drainpipe to daylight or plug for the contractor tire wash areas, and for building construction.
  20. Provide a temporary water means for other trades to utilize. Include all costs associated with metering from local utilities as well as valves and hoses for contractors to utilize. The Construction Manager will not provide this service.
  21. In addition to the haul road above, provide an allowance, included in base bid, to provide, maintain and remove upon construction manager direction, 4,000' of stoned roadway, 10'-0" wide. Road shall consist of fabric, 10" of stone for the length of the road and the means to compact it.
  22. Provide an allowance, included in base bid, to provide, maintain and remove upon construction manager direction, a total of 7 temporary crane pads; each a 20'x20' stoned area. Pads shall consist of fabric, 10" of stone for the area of the pad, and the means to compact it.
  23. Proof rolling of limit of excavation.
  24. All utilities shall be brought to within +/- 5 feet of the building line by this Contractor. The connection and all utilities from +/- 5 feet and into the building shall be by others.
  25. Provide perimeter drains at all buildings (including within 5' of the building perimeter).



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- Provide downspout adaptors and coordinate with roofer for the correct downspout size.
26. Backfilling as detailed below is the responsibility of this Contractor. Soil types shall be in accordance with Del Dot standard specifications.
  27. It is the intent to use on site material and not imported fill. The use of this on site material shall conform with the compaction requirements as specified on Civil drawings and Specifications. If on site material does not meet these requirements, a unit price for imported fill will be used.
  28. Provide perimeter protection of all excavated areas until suitably backfilled.
  29. Provide, maintain, and remove stabilized site entrance.
  30. Furnish and install and maintain concrete wash out areas for other subcontractors and their suppliers for project duration. Remove this item at conclusion of project and complete as indicated on finished drawings.
  31. Provide street cleaning of mud, etc. on a daily basis.
  32. This Contractor shall include in the Base Bid the cost of remobilization, cleaning and tack coating the asphalt base course in order to install the asphalt top coat.
  33. This is not a secure site. All contractors are responsible for concealing, locking and/or removing any materials on a daily basis. ASD and EDiS will not be responsible for any lost tools, materials or equipment.
  34. ASPHALT CEMENT COST ADJUSTMENT
    - a. Payments to the Contractor shall be adjusted to reflect increase or decreases in the Delaware Posted Asphalt Cement Price when compared to the Project Asphalt Cement Base Price, as defined in these Special Provisions.
    - b. The Delaware Posted Asphalt Cement Price will be issued monthly by the Department and will be the industry price for Asphalt Cement, F.O.B. Philadelphia, Pennsylvania.
    - c. All deviations of the Delaware Posted Asphalt Cement Price from the Project Asphalt Cement Base Price are eligible for cost adjustment. No minimum increases or decreases or corresponding percentages are required to qualify for cost adjustment.
    - d. Actual quantity of asphalt cement qualifying for any Asphalt Cement Cost Adjustment will be computed on the basis of weight tickets and asphalt percentage from the approved job mix formula.
    - e. For Recycled Hot-Mix the asphalt percentage eligible for cost adjustment shall be only the new asphalt cement added to the mix.
    - f. The Asphalt cement cost adjustment will be calculated on grade PG 64-22 asphalt regardless of the actual grade of asphalt used. The Project Asphalt Cement Base Price for the project will be based on the August 1st price posted on DelDOT's website.
    - g. If the Contractor exceeds the authorized allotted completion time, the price of asphalt

cement on the last authorized allotted work day, shall be the prices used for cost adjustment. However, if the industry posted price for asphalt cement goes down, the asphalt cement cost shall be adjusted downward accordingly.

35. Include all costs for temporary barricades, arrows, pedestrian protection, flagmen, etc. required to complete the work. It shall be assumed there is at least 1 marked flagger to escort trucks through the project site.
36. Provide site utilities to playing fields and courtyards, including irrigation lines as part of this contract.
37. Provide all plant material and all associated work including, but not limited to, staking, watering, weeding, etc.
38. Provide filter fabric, weed, check and mulch.
39. Provide all sod.
40. Provide specified warranties.
41. Respread topsoil from the established topsoil stockpiles and fertilize as specified in the geotechnical reports and civil drawings. Provide temporary and permanent stabilization grass seeding at all areas following the completion of construction activities. This contractor is responsible for all weeding, watering, fertilization, and grass cutting to ensure 100% grass growth in the entirety of these areas until permanent certificate of occupancy is approved..
42. Furnish and install all site signage. This includes all traffic, pedestrian and School related signage not mounted on buildings, including fire lane curbing and signage.
43. Base bid shall include all standard dewatering measures; utilizing trenches, crocks, stone and portable pumping measures. This contractor to provide these measures as required to perform their work. Well pointing if necessary will be handled as a negotiated cost by the Owner.
44. Temporary water will be the responsibility of the individual Contractors. The Construction Manager will not provide this service.
45. This contractor must provide a silica exposure plan that meets or exceeds the new 2017 silica OSHA requirements before any work can commence. At a minimum, it must be implemented in to the company safety plan, include all monitoring, testing, limits exposure, provide respiratory plan and/or equipment modifications such as adding water to equipment during exposed work and keep records of exposure.
46. Provide As-Built Drawings.

47. Provide pricing for all alternates as described in Section 012300-Alternates.
  - a. Alt #1 : Provide all excavation, grading, stone subbase, concrete paving, etc. to construct new sidewalks with the campus center green.
  - b. Alt #2 : Modify subgrade at Lacrosse/Field Hockey fields to match synthetic turf sections shown on Sheet C-521.
  - c. Alt #4 : Provide additional grading as required for alternate high school gymnasium size/layout. Extend building subgrade 5' past perimeter to allow for foundation excavation. Modify perimeter drains and downspout adapters to fit new building layout.
48. Provide \$10,000 allowance to furnish, install, maintain and remove temporary chain link site fencing as directed by Construction Manager. The fence shall consist of new 6' high #9 gauge galvanized chain link fence with top rail and bottom tension wire. The posts shall be installed in the ground. The exact location will be as directed by the Construction Manager. This fence is required to be in-place for the duration of the project. Maintain this work until Substantial Completion of this project. At the end of the project remove the fence, patch and repair the finished surfaces to a like-new condition.
49. Provide \$100,000 allowance to be used at the discretion of the Construction Manager.

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CONTRACT B-03 : TIMBER DRIVEN PILES

A. Work included in this contract consists of, but is not necessarily limited to, all labor, materials and equipment for:

- Technical Specification Sections:

Division 0	Bidding and Contract Requirements
Division 1	General Requirements
Division 31	Earthwork
Section 316219	Timber Piles

This contract also includes, but is not necessarily limited to, all labor, materials and equipment for the following:

1. Provide structural pile system, as required by the Drawings and Specifications. Include pricing for providing piles at the new Field House as shown on Sheet FS101.
2. Monitoring of production piles by a Geotechnical Engineer will be provided by the Construction Manager.
3. Layout of piles and stake out by the Pile Contractor. Concrete contractor to provide layout of all foundations (grade beams and pile caps) prior to the start of pile driving operations.
4. Cut off all piles to 1' above building pad subgrade and dispose of pile cut offs. Cut off of remaining pile length to final elevation will be performed by the Concrete Contractor during excavation and installation of new grade beams and pile caps.
5. The Pile Contractor will drive sixteen (16) probe piles at various locations. The Pile Contractor is expected to consult the Construction Manager to determine probe pile location. Assume a forty (40) LF length for each probe pile. Probe piles will be production piles. A pile driver analyzer will be utilized while driving all sixteen (16) probe piles.
6. All piles are to be bid thirty (35) LF each.
  - a. Contract cost will be adjusted at completion of work in accordance with unit prices.
7. This Contractor will have access to the entire site. This Contractor is responsible for his own means of temporary ramps and other provisions to position his equipment.
8. Upon completion of all pile driving activities, this Contractor is responsible for returning the site and building pad to the condition that is free of ruts, trenches and other obstacles.
9. This Contractor will be responsible for achieving designed cut off elevation.
10. Provide as-built drawings by a licensed surveyor at the completion of this contract on BIM

software.

11. Provide pricing for all alternates as described in Section 012300-Alternates.
  - a. Alt #3 : Provide a second pile driving rig, operator, and crew to install piles simultaneously with the rig and crew included in the base bid.
  - b. Alt #4 : Provide additional layout and timber piles based upon the alternate high school gymnasium size and layout.
12. Provide a \$50,000 allowance to be used at the discretion of the Construction Manager.

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CONTRACT B-04 : CONCRETE

A. Work included in this contract consists of, but is not necessarily limited to, all labor, materials and equipment for:

- Technical Specification Sections:

Division 0	Bidding and Contract Requirements
Division 1	General Requirements
Section 033000	Cast-in-Place Concrete
Section 033050	Integral Concrete Waterproofing
Section 071313	Sheet Membrane Waterproofing
Section 072100	Thermal Insulation
Section 072616	Under-Slab Vapor Barrier/Retarder
Division 31	Earthwork
Section 316219	Timber Piles

This contract also includes, but is not necessarily limited to, all labor, materials and equipment for the following:

1. Provide concrete footings, foundation walls, piers, wall footings, pile caps, grade beams, elevator pit walls and slab, orchestra pit walls and slab, slabs on grade, and all reinforcing steel for High School, Performing Arts Center, and Middle School. Concrete above the slabs-on-grade (stair pan infills, slabs-on-deck, locker bases, etc) is to be provided under a separate contract. Concrete for outlying buildings (maintenance facility expansion, field house, greenhouse) is to be provided under a separate contract.
2. Provide concrete stairs on grade and thickened slabs within the building perimeter. Include all excavation and grading necessary to complete this work.
3. Provide all form work, concrete, reinforcement, excavation, etc. required to complete this work. This contractor to provide excavation at depths and areas required to properly form and pour the elevator and orchestra pit walls and slabs.
4. Coordinate work with the Pile Contractor. Provide layout of all foundations (grade beams and pile caps) for the Pile Contractor prior to the start of pile driving operations. Pile driving contractor to layout piles based upon foundation layout.
5. The Concrete Contractor will be responsible for re-establishing layout of all concrete work as shown on the structural and architectural drawings after piles have been driven.
6. The Concrete Contractor to furnish and install reinforcing steel, admixtures, curing compound, as required in the Contract Documents.

7. Perimeter insulation at foundation walls.
8. Underslab vapor barrier, insulation, reglets, waterstops, control and construction joints.
9. Placement of related items furnished under other Specification Sections.
10. Anchor bolts and leveling plates will be installed by this Contractor and furnished by the Structural Steel contractor. Anchor bolt assemblies to be placed with templates only. Contractor shall supply as-built drawings to steel erector for coordination prior to steel placement.
11. All blockouts and embedments required by plans and specifications.
12. This Contractor to furnish and install all sleeves for incoming utilities at the perimeter walls.
13. This Contractor is responsible for grouting all structural steel base or leveling plates and elevator sill angles.
14. This contractor shall include all hot and cold concrete weather materials and practices. This includes, but is not limited to frost protection, hot/cold water additives and admixtures and pumping as required. This Contractor is also responsible for the premiums associated with any added costs for hot water, heated aggregate and all admixtures for cold or hot weather concrete practices.
15. Coordinate the "Notch" in the concrete slabs to allow for a future Contractor to easily install expansion joint details.
16. Provide dewatering after acceptance of building pad subgrade.
17. Concrete Contractor will be responsible for laying out all concrete work as shown on the structural and architectural drawings. The sitework contractor is to access the subgrade elevation of the building pads at the main buildings (High School, PAC, Middle School) and regrade the pad to provide a flat, compacted surface prior to the start of foundation layout and installation. Written acceptance of the building pad condition will be provided by the concrete contractor before foundation work proceeds. Once the Concrete Contractor has accepted this work it will be the responsibility of the Concrete Contractor to maintain and dewater the building pad and all excavations until the concrete work is complete and backfilled. The Concrete Contractor, Pile Contractor, and sitework Contractor are to coordinate this procedure so that there are no additional costs to the Owner for additional excavation or concrete. Spoils left after backfilling of foundations is complete are to be left outside the building perimeter by the concrete contractor and gathered by the sitework contractor and spread on site. The Concrete contractor is to provide access to the Masonry Contractor for foundation work. Concrete contractor owns dewatering during masonry work and backfill after foundation masonry work is complete.

The exterior face of exterior perimeter foundation walls is to be left open until all below grade brick and natural stone is installed by the masonry contracts to be awarded in Bid Packages C & D.

18. This Contractor to excavate down to the bottom of all wall and column footings as shown on drawings. The timber driven pile contractor is to proceed with their work prior to the start of foundation excavation. The start of concrete foundation excavation is to be coordinated between the CM, Concrete Contractor, and Pile Contractor to ensure that the pile work is given sufficient time to continue their work in front of the concrete foundation installation. All driven piles are to be cut off above the building pad subgrade prior to the start of concrete foundation excavation. The Concrete Contractor is responsible for laying out concrete foundations, grade beams, and pile caps, excavate around the driven piles, and cut off the remaining timber piles to the final elevation. The concrete contractor is responsible to remove the pile cut-offs from site.
19. This contractor is to regrade building subgrade following backfilling of foundation excavation. Building Pad subgrade is to be brought to compaction requirements specified in the project documents. All spoils are to be pushed outside of the building perimeter and will be collected and spread on site by the sitework contractor.
20. This Contractor is responsible for excavating all elevator pits, orchestra pits, stairs and ramps as shown on drawings. This Contractor is also responsible for the backfill of these areas.
21. Provide and maintain perimeter fall protection at excavated area per OSHA standards.
22. Provide pipe and backfill for perimeter drains.
23. Provide all foundation and below slab waterproofing. Bituminous Dampproofing is to be provided by the Masonry Contractor.
24. Provide certified anchor bolt verification drawings to the Construction Manager for review prior to steel erection.
25. Equipment bases and foundations shall be the responsibility of the Contractor providing the equipment.
26. Asphalt concrete paving and portland cement concrete paving, sidewalks and curbs shall be provided by others.
27. All concrete testing will be completed by the Construction Manager, however, it will be the responsibility of this Contractor to furnish all samples.
28. Provide concrete foundations for masonry mock-ups.



29. Provide specified sloping for floor drains/trenches in kitchen, showers, as detailed (Drains to be furnished by Mechanical Contractor.)
30. This Contractor shall include the finishing of concrete slabs around floor penetrations throughout all slab areas. These penetrations will consist of electrical boxes, stubbed conduits, mechanical piping and electrical and technology conduit stubs, etc.
31. Prepare concrete SOG at vestibules to proper elevations for walk off mat.
32. This Contractor shall also include all work included in finishing the concrete floors to all floor drains and or trench drains. Include all sloping and beveling to create a positive flow to the drains.
33. Provide all means of transporting concrete including, but not limited to: pump trucks, cranes, ramps, chutes, buggies.
34. This Contractor shall provide written documentation that all concrete slabs are within the tolerance required by the contract documents. Testing and analysis to be paid for by this Contractor.
35. This Contractor shall include a minimum of ten additional out of sequence remobilizations for concrete slab installation.
36. Provide at least a 48 hour notice prior to any delivery. All deliveries are to be between 7:00 AM and 3:30 PM.
37. This is not a secure site. All contractors are responsible for concealing, locking and/or removing any materials on a daily basis. ASD and EDiS will not be responsible for any lost tools, materials or equipment.
38. This contractor must provide a silica exposure plan that meets or exceeds the new 2017 silica OSHA requirements before any work can commence. At a minimum, it must be implemented in to the company safety plan, include all monitoring, testing, limits exposure, provide respiratory plan and/or equipment modifications such as adding water to equipment during exposed work and keep records of exposure.
39. Provide pricing for all alternates as described in Section 012300-Alternates.
  - a. Alt #4 : Provide additional concrete and waterproofing work associated with the alternate high school gymnasium size and layout.
40. Provide a \$50,000 allowance to be used at the discretion of the Construction Manager.

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CONTRACT NO. B-05 - FOUNDATION MASONRY & DAMPPROOFING

A. Work included in this contract consists of, but is not necessarily limited to, all labor, materials and equipment for:

- Technical Specification Sections:

Division 0	Bidding and Contract Requirements
Division 1	General Requirements
Division 3	Concrete
Section 042000	Unit Masonry
Section 071113	Bituminous Dampproofing
Section 072100	Thermal Insulation

This contract also includes, but is not necessarily limited to, all labor, materials and equipment for the following:

1. Provide foundation masonry and bituminous waterproofing for all new primary structures on campus (high school, performing arts center, and middle school). Foundation masonry under this contract to terminate at the ground floor top of slab elevation throughout. Below grade brick and natural stone veneer is to be provided by separate contracts.
2. Provide masonry units, reinforcing, accessories and related work.
3. Integral masonry flashings, expansion joints, insulation and other related items as required.
4. Mock up as required.
5. Weather protection and temporary heat as required to perform the work and maintain the project schedule.
6. Dewatering of work areas.
7. Layout of the work including responsibility for all elevations and dimensions as they affect other Contractor's work.
8. Fill at hollow concrete masonry units. Grout all below grade masonry.
9. Setting of reinforcing steel in block walls.
10. Cementitious parging.
11. Bituminous Dampproofing

12. Cutting, fitting and building into masonry work, embedments provided by others.
13. Bond beams including reinforcing and fill.
14. This contractor will be responsible for providing their own dumpster and masonry debris disposal off site.
15. Masonry work may occur during summer months. This contractor is responsible for temporary enclosures at mixing station and work areas to continue work through summer conditions.
16. Provide at least a 48 hour notice prior to any delivery. All deliveries are to be between 7:00 AM and 3:30 PM.
17. This is not a secure site. All contractors are responsible for concealing, locking and/or removing any materials on a daily basis. ASD and EDiS will not be responsible for any lost tools, materials or equipment.
18. This contractor must provide a silica exposure plan that meets or exceeds the new 2017 silica OSHA requirements before any work can commence. At a minimum, it must be implemented in to the company safety plan, include all monitoring, testing, limits exposure, provide respiratory plan and/or equipment modifications such as adding water to equipment during exposed work and keep records of exposure.
19. Provide pricing for all alternates as described in Section 012300-Alternates.
  - a. Alt #4 : Provide additional foundation masonry and dampproofing work associated with the alternate high school gymnasium size and layout.
20. Provide a \$20,000 allowance to be used at the discretion of the project manager.

END OF SECTION

### Document Transmission Agreement

By receiving, downloading, installing and/or using the drawings, Computer Aided Design (CAD) data, specifications, plans and/or other documents herein or hereby transmitted (collectively "Documents"), whether the Documents are delivered via CD-ROM, DVD-R, electronic mail, facsimile or other electronic medium or form or downloaded from a website, the recipient or user of the Documents ("User") forms an agreement with Landmark Engineering, Inc. ("LEI") dba Landmark Science & Engineering, and agrees to be bound by the terms and conditions set forth herein. LEI retains ownership of the Documents and permission to use the Documents is given by LEI only subject to the terms and conditions of this Agreement. If the Documents are related to or provided in connection with a certain Project, that Project is as follows:

Project Name: Fairview Campus  
Project LEI Commission No: C2226-8

1. Proprietary Rights: The Contract Documents were prepared by and are the property of LEI. LEI has and retains all common law, statutory and other reserved rights in and to the Documents, in addition to all copyrights thereto.
2. Limitation in Copying: Neither User nor any third party User gives the Documents to or copies the Documents for shall own or claim a copyright in the Documents. User is authorized to use and reproduce applicable portions of the Documents only as necessary. All copies of the Documents shall be returned or suitably accounted for to LEI upon demand. All copies made under this authorization shall bear the statutory copyright notice, if any, shown on the Documents as originally delivered. Submission or distribution to meet official regulatory requirements or for any other legitimate purpose is not to be construed as publication in derogation of LEI's copyrights or other reserved rights.
3. Limitation on Use: The Documents are for use solely with respect to the matter for which User received the Documents from LEI or the Project, as applicable. User agrees that User shall not use the Documents, in whole or in part, in connection with any other matter or project without the prior written consent of LEI. Further, User shall use its best efforts to prevent any third party from misusing the documents. Use of the Documents by User for any purpose other than that for which they were intended, without LEI's written consent or LEI's verification or adaptation for the specific purpose intended, will be at User's sole risk and full legal responsibility. Compensation for verification or adaptation by LEI will be required. LEI shall not be responsible in any manner for layout errors, computation errors or data omissions resulting from the use of the Documents or for errors resulting from the modification or misuse thereof.
4. Inherent Unreliability of Electronic Documents: The Documents are provided for the convenience of User only. The Documents were prepared as LEI's internal working documents. As such, the Documents may be incomplete, contain deliberate or unintentional inaccuracies or be in part obsolete. Further, while the Documents may appear to be accurate, the apparent accuracy is an artifact of the techniques used to generate them and is in no way intended to imply actual accuracy. User takes full responsibility for the accuracy and correctness of and for properly checking and coordinating all relevant dimensions and measurements, areas, inventories, details, member sizes, gage, quantities of materials or other data extracted from the Documents, either manually or with the use of a computer. Reduction of the Documents to electronic media from, as well as the processes of transmitting and downloading, can affect the integrity of the Documents. LEI's delivery of the Documents in electronic form shall not impose on LEI an obligation to transmit any of all subsequent changes in or to the documents. LEI makes no representation or warranty, expressed or implied, regarding the accuracy, currency, completeness or permanence of the Documents. Information contained in other documents (bulletins, change orders, field orders, clarifications, etc.) may not have been incorporated into the Documents. In the event of a conflict between LEI's Construction Issue Plans and Specifications and the Documents, the Construction Issue Plans and Specifications shall govern, and it is User's sole responsibility to determine if any such conflict exists. User agrees to and shall indemnify and hold LEI harmless from and against and defend LEI in the event of any action generated through or arising out of the use of the Documents including the payment or reimbursement of attorneys' fees and expenses.
5. Remedies for Breach: In the event User uses or publishes the Documents in a manner contrary to this Agreement, LEI shall be entitled to all remedies available at law or in equity including without limitation injunctive relief and barring such usage and wrongful publication, without the necessity of prior notice, opportunity to cure or proof of actual damages, and User shall be entitled to recover its reasonable attorney's fees and costs incurred in securing any such relief.
6. Terms of Contract between LEI and User Apply: If User is party to a contract or agreement of any kind with LEI, this Agreement incorporates by reference any restriction on use of the Documents contained in such contract or agreement between LEI and User.

Name of User: \_\_\_\_\_

Name & Title of Person Authorized to Execute Agreement: \_\_\_\_\_

Signature of Authorized Person: \_\_\_\_\_ Date: \_\_\_\_\_

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SECTION 012100 - ALLOWANCES

1. RELATED DOCUMENTS

- A. The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary and other Conditions, if any) and Division 1 as appropriate, apply to the Work specified in this Section.
- B. Refer to provisions in AIA Document A232 – 2009 EDITION, GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION, CONSTRUCTION MANAGER AS ADVISOR EDITION, for requirements in addition to those specified in Division 1.
- C. Refer to Scope Information Sheets for all contracts bound in the Project Manual under Section 011100 - SUMMARY OF WORK. The Scope Information Sheets describe generally the work included in each contract, but the work is not necessarily limited to that described.
- D. For work being constructed under separate prime contracts, provisions of this Section apply to each contract being bid.
- E. Include in the Contract Sum all lump sum and unit cost allowances stated in the Contract Documents.
- F. Designate in the construction progress schedule the delivery dates for products specified under each allowance.
- G. Designate in the Schedule of Values the quantities of materials required under each unit cost allowance.

2. ALLOWANCES FOR PRODUCTS

- A. The amount of each allowance includes:
  - 1. The cost of the product or labor to the Contractor or Subcontractor, less any applicable trade discounts.
  - 2. Delivery to the site.
  - 3. Labor required under the allowance, only when labor is specified to be included in the allowance. If labor is not specified to be included in the allowance, it shall be included in the Contractor's bid and in the resulting Contract Sum.
  - 4. Applicable taxes.

5. Profit and overhead.
- B. In addition to the amount of each allowance, include in the Contract Sum the Contractor's costs for:
  1. Handling at the site; including unloading, uncrating and storage.
  2. Protection from the elements and from damage.
  3. Labor for installation and finishing, except where labor is specified to be a part of the allowance.
  4. Other expenses required to complete the installation.
  5. Contractor's and Subcontractor's overhead and profit.
- C. Refer to Scope Information Sheets under Section 011100 - SUMMARY OF WORK for the amount of each lump sum allowance and for work specified in the specification sections listed below.
3. ADJUSTMENT OF COSTS
  - A. Should the net cost be more or less than the specified amount of the allowance, the Contract Sum will be adjusted accordingly by Change Order.
    1. For products and labor specified under a unit cost allowance, the unit cost shall apply to the quantities actually used with a nominal allowance for waste, as determined by receipted invoices, or by field measurement.
  - B. At Contract closeout, reflect all approved changes in Contract amounts in the final statement of accounting.

END OF SECTION

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SECTION 012200 - UNIT PRICES

1. GENERAL PROVISIONS

- A. The general provision of the Contract, including the Conditions of the Contract (General, Supplementary and other conditions, if any) and Division 1 as appropriate, apply to the Work specified in this Section.
- B. Refer to provisions in AIA Document A232 – 2009 EDITION, GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION, CONSTRUCTION MANAGER AS ADVISOR EDITION, for requirements in addition to those specified in Division 1.
- C. For work being constructed under separate prime contract, provisions of this Section apply to each contract being bid.

2. BASE BID

- A. The Base Bid shall consist of all work shown or specified in the Contract Documents, exclusive of any Additive Unit Prices specified herein.
- B. The Base Bid shall include all work in any Subtractive Unit Prices specified herein.

3. UNIT PRICES

- A. State in the Bid Form the amount to be added to (or subtracted from) the Base Bid per unit of measurement for each Unit Price specified. State this amount to include all overhead and profit. No surcharge in addition to the Unit Price listed will be permitted.
- B. See Section 002113, INSTRUCTIONS TO BIDDERS for related information.
- C. For description of Unit Prices requested, refer to the specification. The method of stating the Unit Prices is described in the Bid Form.
- D. Where both add and deduct unit prices are requested, there shall not be more than a 10% variation between the two.

4. APPLICATION OF UNIT PRICES

- A. Unit prices stated in the Bid Form will apply from the time the Bid is submitted until Contract completion.

5. MEASUREMENT OF QUANTITIES

- A. Quantities shall be determined by field measurement by contractor personnel and as verified by the Construction Manager.

- B. At the Contractor's option, and at his expense, measurement may be made by a registered surveyor.

6. LIST AND DESCRIPTION OF UNIT PRICES

UNIT PRICES

Unit prices conform to applicable project specification section. Refer to the specifications for a complete description of the following Unit Prices:

	<u>BULK</u>		<u>TRENCH</u>	
	<u>Add</u>	<u>Deduct</u>	<u>Add</u>	<u>Deduct</u>
1. Price per Cubic Yard for earth excavation as specified In excavation section	_____ c/y	_____ c/y	_____ c/y	_____ c/y
2. Price per cubic yard for earth excavation.	_____ c/y	_____ c/y	_____ c/y	_____ c/y
3. Price per Square Yard for Light Duty Sidewalk Incl excavation, grading, prep, pour & finish	_____ s/y	_____ s/y	_____ s/y	_____ s/y
4. Price per Square Yard for Heavy Duty Sidewalk Incl excavation, grading, prep, pour & finish	_____ s/y	_____ s/y	_____ s/y	_____ s/y
5. Price per Linear Foot for Concrete Curbing Incl excavation, grading, prep, pour & finish	_____ l/f	_____ l/f	_____ l/f	_____ l/f
6. Price per cubic yard to supply & install Bio-Media Mix	_____ c/y	_____ c/y	_____ c/y	_____ c/y
7. Additional mass concrete in footings	_____ c/y	_____ c/y	_____ c/y	_____ c/y
8. Price per cubic yard for concrete in foundation walls (including forms and reinforcement)	_____ c/y	_____ c/y	_____ c/y	_____ c/y
9. Price per cubic yard for reinforced concrete on grade.	_____ c/y	_____ c/y	_____ c/y	_____ c/y
10. Price per cubic yard for reinforced concrete. Including forms) for structural slabs above grade	_____ c/y	_____ c/y	_____ c/y	_____ c/y
11. Price per cubic yard for excavation and backfill With select material	_____ c/y	_____ c/y	_____ c/y	_____ c/y
12. Price per cubic yard to undercut building subgrade and backfill with structural fill material. Spoils to be placed on site.	_____ c/y	_____ c/y	_____ c/y	_____ c/y
13. Price per cubic yard to undercut footings subgrade and backfill with on-site mined structural fill. Spoils to be placed on site.	_____ c/y	_____ c/y	_____ c/y	_____ c/y
14. Price per cubic yard to undercut footings subgrade and backfill with select spoils to be placed on site	_____ c/y	_____ c/y	_____ c/y	_____ c/y
15. Price per cubic yard to undercut footing subgrade				

UNIT PRICES

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and backfill with 106A stone. Spoils to be placed on site.	<u>          </u> c/y	<u>          </u> c/y	<u>          </u> c/y	<u>          </u> c/y
16. Price to add one additional timber pile. Assume 35 l.f. length	<u>          </u> c/y	<u>          </u> c/y	<u>          </u> c/y	<u>          </u> c/y
17. Price for each additional linear foot Of driven timber pile.	<u>          </u> c/y	<u>          </u> c/y	<u>          </u> c/y	<u>          </u> c/y

END OF SECTION

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SECTION 012300 - ALTERNATES

1. GENERAL PROVISIONS

- A. The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary and other conditions, if any) and Division 1 as appropriate, apply to the Work specified in this Section.
- B. Refer to provisions in AIA Document A232 – 2009 Edition, GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION, CONSTRUCTION MANAGER AS ADVISOR EDITION, for requirements in addition to those specified in Division 1.
- C. For work being constructed under separate prime contracts, provisions of this Section apply to each contract being bid.

2. BASE BID

- A. The Base Bid shall consist of all work shown or specified in the Contract Documents, exclusive of any Additive Alternates specified herein.
- B. The Base Bid shall include all work in any Subtractive Alternates specified herein.

3. ALTERNATES

- A. State in the Bid Form the amount to be added to the Base Bid for each Alternate specified.
- B. See Section 002113 - INSTRUCTIONS TO BIDDERS for related information.
- C. The description of Alternates contained herein is in summary form. Detailed requirements for materials and execution shall be as specified in other sections and as shown on drawings.

***Alternate No. 1:*** Provide new Sidewalk within the Green.

- a. Base Bid: Provide grading, seed, and stormwater controls within the Green as indicated on the drawings. Perimeter sidewalks at the Green are to be included in Base Bid.
- b. Alternate: Provide grading, seed, stormwater controls, and additional sidewalks within the interior space of the Green area. Extent of sidewalks is shown on Civil Drawings, and is noted as "Alternate DD-02". Refer to Sheets C-122 and C-126 for more information.

***State on the Bid Proposal Form a price to be added to the Base Bid for all work related to this alternate.***

***Alternate No. 2:*** Provide Turf Fields at Lacrosse/Field Hockey Fields in lieu of Seed

- a. Base Bid: Provide grading, seed, and stormwater controls at the Lacrosse/Field Hockey Fields as indicated on the drawings
- b. Alternate: Contract B-02 is to revise grading to provide a subgrade for the turf field sections as shown on Sheet C-521. Stone, curbing, piping, etc to construct turf fields at the Lacrosse/Field Hockey fields is to be provided by the Athletic Sitework contract to be issued as part of Bid Package 'E'.

***State on the Bid Proposal Form a price to be added to the Base Bid for all work related to this alternate.***

***Alternate No. 3:*** Provide a second rig, operator, and crew to install timber driven piles.

- a. Base Bid: Provide one rig, operator, and crew to install all timber driven piles.
- b. Alternate: Provide a second rig, operator, and crew to install timber driven piles simultaneously with the base bid rig and crew. Contractor will be required to provide a schedule showing the potential saved time on the schedule during the scope review process.

***State on the Bid Proposal Form a price to be added to the Base Bid for all work related to this alternate.***

***Alternate No. 4:*** Provide High School Gymnasium Alternate Size/Layout

- a. Base Bid: Provide the high school gymnasium as indicated on the Area 'H' floor plans.
- b. Alternate: Provide the revised layout of the gymnasium as indicated on the Area 'H' Alternate drawings. Modifications will include construction of the elevated track, increased bleacher capacity, and finishes associated with this track. Refer to Sheets S-118A, S-128A, A-118A, and A-128A for the alternate layout.

***State on the Bid Proposal Form a price to be added to the Base Bid for all work related to this alternate.***

***Alternate No. 5:*** Provide 2,000 sf Maintenance Building Expansion

- a. Base Bid: Provide the base Maintenance Building Expansion as indicated on the drawings. Provide grading around the building as indicated.
- b. Alternate: Provide the additional 2,000 sf Maintenance Building Expansion. This is to be included as part of a GC package for the outlying buildings being issued with Bid Package 'E'. Regrading at the area of the expansion will be included with that GC package.

***State on the Bid Proposal Form a price to be added to the Base Bid for all work related to this alternate.***

***Alternate No. 6:*** Provide new Entrance Wall at the Green

- a. Base Bid: Contract B-02 : Sitework is to provide grading at the Green as indicated on the project drawings.
- b. Alternate: Contract C-07 : Masonry is to provide an alternate price to excavate, pour a concrete footing, and install the masonry entrance wall as indicated on the alternate design drawings. Lettering for the entrance wall signage is to be provided by Contract D-40 : Specialties.

***State on the Bid Proposal Form a price to be added to the Base Bid for all work related to this alternate.***

***Alternate No. 7:*** Provide In-Field Mix & Backstops at Practice Baseball/Softball Field

- a. Base Bid: Contract B-02 : Sitework is to provide grading, topsoil, and seeding to provide the fields as indicated on the civil plans.
- b. Alternate: Contract B-02 is to provide subgrade at the infield areas of the Baseball/Softball practice fields. Supply and installation of the infield mix and backstops will be provided in Contracts under Bid Package 'E'.

***State on the Bid Proposal Form a price to be added to the Base Bid for all work related to this alternate.***

***Alternate No. 8:*** Provide Site Shed at Soccer/Football Auxiliary Field

- a. Base Bid: Contract B-02 : Sitework is to provide grading, topsoil, and seeding in this area as indicated on the civil plans.
- b. Alternate: Contract E-51 is to provide a turn-down concrete slab and site shed at the Soccer/Football Aux field as indicated on the alternate design drawings.

***State on the Bid Proposal Form a price to be added to the Base Bid for all work related to this alternate.***

***Alternate No. 9:*** Provide Irrigation System at Grass Fields

- a. Base Bid: Contract B-02 : Sitework is to provide water supply piping and hose connections as indicated on the civil drawings.
- b. Alternate: Contract E-51 is to provide an automatic sprinkler system at the grass athletic fields and connect to the pipe being provided under Contract B-02.

***State on the Bid Proposal Form a price to be added to the Base Bid for all work related to this alternate.***

***Alternate No. 10:*** Provide Irrigation System at Main Entrance Green

- a. Base Bid: Hose bibbs are to be provided at the building exterior for future connections of a portable sprinkler system.
- b. Alternate: Contract E-51 is to provide an automatic sprinkler system at the main entrance green and tie-in to a water supply line within the building.

***State on the Bid Proposal Form a price to be added to the Base Bid for all work related to this alternate.***

*this alternate.*

**Alternate No. 11:** Provide Irrigation System at Building Area

- a. Base Bid: Hose bibbs are to be provided at the building exterior for future connections of a portable sprinkler system.
- b. Alternate: Contract E-51 is to provide an automatic sprinkler system at the building perimeter and tie-in to a water supply line within the building.

***State on the Bid Proposal Form a price to be added to the Base Bid for all work related to this alternate.***

**Alternate No. 12:** Provide Irrigation System at Courtyard

- a. Base Bid: Hose bibbs are to be provided at the building exterior for future connections of a portable sprinkler system.
- b. Alternate: Contract E-51 is to provide an automatic sprinkler system within the courtyard area and tie-in to a water supply line within the building.

***State on the Bid Proposal Form a price to be added to the Base Bid for all work related to this alternate.***

**Alternate No. 13:** Provide Orchestra Pit Lift

- a. Base Bid: Provide orchestra pit structure as indicated on the project drawings.
- b. Alternate: Contract C-10 : Carpentry & General Works is to provide an orchestra pit lift and associated floor finish.

***State on the Bid Proposal Form a price to be added to the Base Bid for all work related to this alternate.***

**Alternate No. 14:** Provide Additional Terrazzo Tile Floors in High School Corridors

- a. Base Bid: Provide flooring in the High School Corridors as indicated on the finish schedule & floor plans.
- b. Alternate: Contract C-35 : Carpet & VCT is to eliminate base bid finish where indicated in the high school corridors and Contract D-37 : Terrazzo Tile is to provide terrazzo tile in these locations instead.

***State on the Bid Proposal Form a price to be added to the Base Bid for all work related to this alternate.***

**Alternate No. 15:** Provide LVT Flooring in Performing Arts Center Back-of-House

- a. Base Bid: Provide flooring in the Back-of-House areas of the Performing Arts Center as indicated on the finish schedule & floor plans.
- b. Alternate: Eliminate base bid finish and provide LVT flooring in the back-of-house area where indicated on the finish plans.

***State on the Bid Proposal Form a price to be added to the Base Bid for all work related to this alternate.***

***Alternate No. 16:*** Provide Wood Panel Ceilings where shown throughout High School, Performing Arts Center, and Middle School

- a. Base Bid: Provide ceiling finishes throughout the High School, Performing Arts Center, and Middle School as indicated on the finish schedule & floor plans.
- b. Alternate: Eliminate base bid ceiling finishes and provide wood panel ceilings where indicated on the finish plans.

***State on the Bid Proposal Form a price to be added to the Base Bid for all work related to this alternate.***

***Alternate No. 17:*** Provide Orchestra Shell & Integral Light Fixtures in Performing Arts Center

- a. Base Bid: Provide stage rigging and curtains as indicated on the project drawings.
- b. Alternate: Contract D-44 : Theatrical Rigging & Curtains is to supply and install the orchestra shell & integral light fixtures as indicated.

***State on the Bid Proposal Form a price to be added to the Base Bid for all work related to this alternate.***

END OF SECTION

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SECTION 012600 - CHANGE ORDER PROCEDURES

1. GENERAL:

- A. The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary and other Conditions, if any) and Division 1 as appropriate, apply to the Work specified in this Section.
- B. Refer to provisions in AIA Document A232 – 2009 EDITION, GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION, CONSTRUCTION MANAGER AS ADVISOR EDITION, for requirements in addition to those specified in Division 1.
- C. The Construction Manager is responsible for processing all change orders. Each request will be assigned a change order request (COR) number. The Change Order Request & Execution Form will be initiated via the web-based project management system (Building Blok) used by the CM.
- D. It is to be clearly understood that no extra work shall commence without an approved written and executed change order from the Owner.

2. INITIATING A CHANGE ORDER:

- A. Specific changes initiated by the Owner, Architect, Construction Manager (CM) or Contractor will be processed as follows:
  - 1. The Owner will authorize the Architect to prepare sufficient documents to establish an accurate price. These documents to be forwarded to the Construction Manager and Owner “for pricing only, not authorized for construction.” The Construction Manager will develop the estimate (within 2 weeks) showing a breakdown by trades with all trade contractor quotes. The Owner will approve or reject the change request within two (2) weeks. If the Owner elects to proceed with the change, the Construction Manager will prepare formal change orders to the various trade contractors involved in the change and reference in all formal change orders the original change order request number.
  - 2. Field Change: Contractor shall immediately notify the Construction Manager of a change due to field conditions or site conditions. If documents cannot be prepared for pricing due to schedule constraints, the Construction Manager will make every effort in estimating the field change. If the Owner and Construction Manager agree that certain field changes should be handled on a time and material basis, the Construction Manager will closely monitor the Contractor's labor and material affecting this change. At the completion of the work a formal change order will be issued.

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3. Contractor Change: If a Contractor initiates a change order for work not included in the Contract, the Construction Manager and Architect will research the validity of the request, verify quantities and pricing and submit to the Owner for approval on a change order request.
  - B. The additional cost, or credit to the Owner resulting from a change in the Work shall be by mutual agreement of the Owner, Contractor, Construction Manager and the Architect.
3. PROCESSING A CHANGE ORDER:
- A. The Contractor will fill in the Change Order Request & Execution Form (COREF) with a brief description of the change, any time extension, and cost changes.
  - B. The Contractor will attach to the COREF copies of the written quotations from the trade contractors, Contractors, and suppliers. The Labor Detail Sheet and the Change Order Detail forms must be added as an attachment to the COREF. The Contractor and each sub-tier contractor (as applicable) must fill out the Labor Detail Sheet and Change Order Detail Sheet. Samples of these forms are attached.
  - C. In all cases, this cost or credit shall be based on the "DPE" wages required and the "invoice price" of the materials/equipment needed.
  - D. "DPE" shall be defined to mean "direct personnel expense". Direct payroll expense includes direct salary plus customary fringe benefits (prevailing wage rates) and documented statutory costs such as workman's compensation insurance, FICA, and unemployment insurance.
    1. "Fringe Benefit" is any medical, life or disability insurance, paid time off, etc.
    2. "Worker's Compensation" is the insurance required for injuries including medical leave, etc.
    3. "FICA" is the costs association with Social Security and Medicare insurance.
    4. "Unemployment insurance" is the cost associated with the governmental assessment for employee's unemployment benefits.
  - E. "Invoice price" of materials/equipment shall be defined to mean the actual cost of materials and/or equipment that is paid by the Contractor (or Subcontractor) to a material distributor, direct factory vendor, store, material provider, or equipment leasing entity.
  - F. In addition to the above, the Contractor is allowed markup for overhead and profit on additional work performed as outlined in Specification Section 012613, Contractor Compensation.



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G. Building Blok Procedures: The Contractor will submit all change order requests and supporting documentation via the Building Blok web-based project management system. Each Contractor will be issued a unique login and password. Each contractor must submit the information as follows:

1. Create a new change order, from your "To-Do List" by clicking on the "Create Issue" tab in the upper right corner and select "Change Order Request".
2. The Contractor will enter a brief description of the change in the "Summary" block. A detailed description of the change will be entered in the "Description of Change" block, to include any changes to documents or time extension. The cost of the change will be entered in the "Total Cost Change" block.
3. The Labor Detail Sheet and the Change Order Detail forms must be added as an attachment to the request. The Contractor and each sub-tier contractor (as applicable) must fill out the Labor Detail Sheet and Change Order Detail Sheet. Samples of these forms are included behind this section. In addition to these forms, the Contractor also must attach any material and equipment rental quotations. All of these documents should be scanned and saved as a PDF file. Click on the "Browse" box to upload the file. Be sure to wait until Building Blok tells you the file was "Uploaded Successfully".
4. Once the information is entered on the form and the proper attachments are uploaded, the contractor will click "Save". The Contractor will be prompted to enter their password to approve an electronic signature. Once you save the request you will have an opportunity to check it before submitting it to the CM. After you verify the COREF is correct click "Recommend Approval" to submit the change request to the CM. The Contractor will then be prompted to re-enter the password to approve an electronic signature and complete the submission request. Click on "Home" in the upper left corner to make sure the change order does not appear on your To-Do List.
5. The Change Order Request will then be reviewed by the CM Project Manager and Recommended for Approval, Rejected, or returned to the Contractor for additional information. Once the Construction Manager, Owner, and Architect have approved the request all parties will receive an email from Building Blok notifying them that a fully executed Change Order and Contract Recalculation Form can be downloaded from Building Blok. Hard copies of the executed change order and recalculation form will not be provided by the CM.

It is to be clearly stated that no extra work shall commence without an approval from the **Owner or Construction Manager** or Owner's representative.

END OF SECTION



**CHANGE ORDER DETAIL FORM**  
(Provided by contractor, subcontractor or sub tier contractor)

**DATE SUBMITTED:**  
**CONTRACT:**  
**CONTRACTOR:**  
**PROJECT NAME:**  
**CHANGE ORDER REQUEST #:**

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<b>LABOR SECTION</b>			
<b>TRADESMAN(s):</b>	<b>LABOR HOURS</b>	<b>RATE (per schedule)</b>	<b>SUBTOTAL</b>
<b>Subtotal</b>			

<b>MATERIAL SECTION</b>			
<b>MATERIAL:</b>	<b>QUANTITY</b>	<b>UNIT COST</b>	<b>SUBTOTAL</b>
<b>Subtotal</b>			

<b>EQUIPMENT SECTION</b>			
<b>EQUIPMENT:</b>	<b>QUANTITY</b>	<b>UNIT COST</b>	<b>SUBTOTAL</b>
<b>Subtotal</b>			

<b>SUBTOTAL</b>	
<b>SUBCONTRACTOR/ SUB TIER*</b>	
<b>OH &amp; PROFIT (7.5% on sub/sub tier only)</b>	
<b>BOND COST</b>	
<b>OH &amp; PROFIT (15% on own work)</b>	
<b>GRAND TOTAL</b>	

3/2012



## LABOR DETAIL FORM

(Provided by contractor, subcontractor, or sub-tier contractor)

**DATE:**

**CONTRACT:**

**CONTRACTOR:**

**PROJECT NAME:**

**CHANGE ORDER REQUEST #:**

<b>CLASSIFICATION:</b>			
Base Wage Rate:			
Health Insurance			
Holidays			
Sick Days			
Life Insurance			
Disability Insurance			
Dental Insurance			
Company Vehicle			
401K			
Education			
Other ( <i>specify below</i> )			
<b>Subtotal</b>			
<b>Posted Prevailing Rate</b>			
FICA (Social Security & Medicare)			
SUTA (State Unemployment)			
FUTA (Federal Unemployment)			
General Liability Insurance			
Worker's Compensation			
<b>Total Wage Rate</b>			

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SECTION 012613 - CONTRACTOR COMPENSATION

1. GENERAL

- A. The Contractor agrees to perform any additional Work, for the net cost of materials and labor (including wages paid, payroll taxes, and all insurance) plus the following percentage for all of his overhead and profit, which includes Field Supervision:

The percentages to be added or allowed for any Work change involving both added Work and omitted Work shall be applied only to the net difference in cost.

1. 15% mark-up (10% overhead and 5% profit) by the Contractor on Work performed by his own forces.
  2. For work done by a Subcontractor, 10% for subcontractor overhead and 5% for subcontractor profit to which the Contractor may add 7.5% for his overhead and profit combined.
  3. Contractor mark-up shall include supervision, home and field overhead, all self-owned small tools and equipment.
- B. When the Contractor is directed to perform overtime work at the CM (Owner) expense to accelerate contractual work, the cost for same shall only be the actual premium costs incurred by the Contractor.

END OF SECTION

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SECTION 012900 - PAYMENT PROCEDURES

1. GENERAL PROVISIONS

- A. The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary and other conditions, if any) and Division 1 as appropriate, apply to the Work specified in this Section.
- B. Refer to provisions in AIA Document A232 - 2009 Edition, GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION, CONSTRUCTION MANAGER AS ADVISOR EDITION, for requirements in addition to those specified in Division 1.
- C. For work being constructed under separate prime contracts, provisions of this Section apply to each contract being bid.

2. REQUIREMENTS INCLUDED

- A. Submit Applications for Payment to Construction Manager in accordance with the schedule and procedures established in the Contract Documents.

3. RELATED REQUIREMENTS

- A. Owner-Contractor Agreement.
- B. Conditions of the Contract: Article 9 PAYMENTS AND COMPLETION.
- C. Section 01 31 13: Project Coordination Meetings
- D. Section 01 33 00: Submittal Procedures
- E. Section 01 77 00: Closeout Procedures

4. FORMAT AND DATA REQUIRED

- A. Submit itemized applications inputted into Building Blok (EDiS' Web-Based Project Management software), examples of which will be furnished to the Contractor at the Pre-Construction meeting.
- B. Provide itemized data on Continuation Sheet:
  - 1. Format, schedules, line items and values: Duplicates of those of the schedule of values previously accepted by the Construction Manager.
- C. Once approved on Building Blok, print out two copies and submit signed and notarized copies to the Construction Manager.

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5. PREPARATION OF APPLICATIONS FOR PROGRESS PAYMENTS

A. Form: AIA Document G702/CMa

1. Fill in required information, including that for Change Orders executed prior to date of submittal of application.
2. Fill in summary of dollar values to agree with respective totals indicated on Continuation Sheets.

B. Continuation Sheets:

1. Line items of components of Work will be subject to Owner's review and approval under the Provisions of Section 013300 - SUBMITTALS, and the General Conditions. Continuation Sheets shall follow Schedule of Values submitted with the first application for payment.
2. Fill in total list of all scheduled components of Work, with item number and scheduled dollar value for each item. Fill in values of work completed in the period.
3. Fill in dollar value in each column for each scheduled line item when work has been performed or products stored; round off values to nearest dollar.
4. List each Change Order executed prior to date of submission, at the end of the Continuation Sheets; list by Change Order Number, and description, as for an original component item of work.
5. Contractor is to include a line item for "Closeout Documents" equaling 3.5% of their contract value.

6. PREPARATION OF APPLICATION FOR FINAL PAYMENT

- A. Fill in Application form as specified in progress payments.

7. SUBMITTAL PROCEDURES

A. Complete Payment Applications:

1. Submit completed Application to the Construction Manager by the date stipulated in the Project Manual.

- B. Number: Submit 2 copies of each Building Blok invoice signed and notarized payment application.

END OF SECTION

SECTION 013113 - PROJECT COORDINATION MEETING

1. PROJECT COORDINATION MEETING

- A. An on-site project coordination meeting will be held on a biweekly basis throughout the project construction period.

2. ATTENDANCE

- A. Attendance at the project coordination meeting is mandatory of each Contractor or major supplier on the project.
- B. The representative of the Contractor shall be the Project Manager and field superintendent, unless a substitute representative has been approved by the Construction Manager.
- C. Contractor will begin attending the Project Coordination Meetings at least 4 weeks prior to mobilization on site, and will continue until the Contractor has fulfilled the obligations of his Contract.

3. AGENDA

- A. The Construction Manager will set the agenda for the biweekly Project Coordination Meeting.
- B. At a minimum, the Contractor shall be prepared to discuss the following:
  - 1. Actual vs. as planned progress for the prior two week period.
  - 2. Planned construction activities for the next four weeks.
  - 3. Contract document clarifications.
  - 4. Coordination items with other contractors.
  - 5. Quality Control.
  - 6. Recently issued change orders.
  - 7. Potential change orders.
  - 8. Submittals and shop drawings.
  - 9. Other items requiring Construction Manager's attention.

END OF SECTION

SECTION 013119 – PRE-INSTALLATION MEETINGS

1. PRE-INSTALLATION MEETINGS

- A. An on-site pre-installation meeting will be held at least two weeks prior to commencement of installation of work.

2. ATTENDANCE

- A. Attendance at the pre-installation meeting is mandatory of each Contractor and/or major supplier as required for each specific meeting listed below.
- B. The following individuals shall attend these meetings:
- Contractors' Project Manager
  - Contractors' Field Superintendent
  - Contractors' Safety Representative (as needed)
  - Key Subcontractors, Suppliers, and Vendors
  - EDiS Project Manager
  - EDiS Field Manager
  - EDiS Safety Director (as needed)
  - EDiS MEP Specialist (as needed)
  - Owner's Representative (as needed)
  - Architect/Engineer (as needed)
  - Governmental Agency Representatives (as needed)
  - Testing/Inspection Agency Representatives (as needed)
  - Utility Company Representatives (as needed)

3. SUBMITTALS

- A. Each contractor is responsible to have all submittals and mock-ups, as related to the pre-installation meeting scope of work, submitted and approved prior to commencement of the pre-installation meeting.

4. LIST OF REQUIRED MEETINGS

- Sitework – Erosion and Sediment Control
- Sitework
  - Bulk Grading
  - Asphalt Paving
  - Concrete Curbs, Gutters, & Sidewalks
- Landscaping
- Site Utilities
- Foundations & Concrete Slabs
- Underslab Utilities
- Athletic Courts and Equipment



5. AGENDA

- A. At a minimum, the Contractor shall be prepared to discuss the items as listed on the agenda template shown on the following page:

**PROJECT:** \_\_\_\_\_  
**PRE-INSTALLATION MEETING : (Insert Phase of Work)**

**A. ATTENDEES:**

<u>NAME</u>	<u>COMPANY</u>	<u>WORK ITEM</u>	<u>CONTRACT</u>

**B. TESTING & INSPECTION REQUIREMENTS *(THESE REQUIREMENTS COME FROM THE PROJECT MANUAL)***

**C. REVIEW CONTRACT DRAWINGS AND SPECIFICATIONS**

<u>Drawing / Spec No.</u>	<u>Comments / Conflicts</u>

**D. REVIEW SCOPES OF WORK *(SEE SECTION 011100 IN THE PROJECT MANUAL)***

**E. REVIEW RELEVANT RFI'S**

**F. REVIEW SUBMITTALS *(SEE THE SUBMITTAL REGISTER)***

**G. REVIEW MATERIALS AND DELIVERIES**

**H. REVIEW SCHEDULE AND SEQUENCE OF WORK**

**I. JOB SITE SAFETY (*SEE THE CONTRACTOR'S SAFETY PROGRAM OR OSHA*)**

- Safety Plans must be submitted before the start of work
- Certificates of Insurance need to be submitted before the start of work
- Minimum PPE – Hardhats, steel toe boots, safety glasses
- Lock-out, Tag, Test and Try ALL utilities is critical before the start of demolition
- Signage & HAZCOM Requirements
- Potential Hazards
  - Excavations >4 ft
  - Slips/trips/falls
  - Existing utilities to remain and protected
  - Overhead debris
  - Power tools
  - Heavy equipment

**J. COORDINATION WITH OTHER TRADES**

**K. ACTION ITEMS AND RESPONSIBILITY**

END OF SECTION

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SECTION 013125- WEB-BASED PROJECT MANAGEMENT SYSTEM

1. GENERAL PROVISIONS

- A. The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary and other Conditions, if any) and Division 1 as appropriate, apply to the Work specified in this Section.
- B. Refer to provisions in AIA Document A232 - 2009 EDITION, GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION, for requirements in addition to those specified in Division 1.
- C. Refer to Scope Information Sheets for all contracts bound in the Project Manual under Section 011100 - SUMMARY OF WORK. The Scope Information Sheets describe generally the work included in each contract, but the work is not necessarily limited to that described.
- D. All Contractors shall use Internet/Web-based project management software to transmit documents, track, and otherwise manage this project.
- E. Use of this project management software will not change any contractual responsibilities of the construction team members.

2. DEFINITIONS

- A. System: A real time web-based software that shares data, translates data, organizes data, facilitates communication, archives actions, and offers scheduling prompts to identified Users.
- B. Users: Authorized participants of this project furnished with a unique password and authorized to access the system to view/input/export data. Owner, Construction Manager, Architect, and the Contractors are all Users. Other Users may be added as necessary.
- C. Contacts: Entities identified to automatically receive specific transmissions or entities selected to receive specific information sent by the system through to an e-mail address.
- D. Signees: Those individuals identified, by the Contractors, authorized to sign change orders and payment applications via electronic signature. This electronic signature is as contractually binding as an original signature on paper.

3. USE OF SYSTEM

- A. The use of the system is mandatory for the documentation of the transmittal of all non-oral information, even if the actual transmission of the information is by another means.
- B. The use of the system will be mandatory by the Contractors to send, retrieve, and respond to data.

- C. In addition to this web-based project management system, the Contractors will be required to use electronic mail (email) for day-to-day communication and correspondence. Email will be the primary means of transmitting written communication (i.e. meeting minutes, draft pay applications, etc.).

4. QUALITY ASSURANCE

- A. A three hour training session in the use of the software for this project will be offered by the Construction Manager at a location convenient to the project site. Attendance by one member of each Contractor's organization is mandatory. Additional attendees may enroll based on availability of training space. All attendees must have a working knowledge of computers. Training can not begin until three working days after the receipt of the submittals indicated below.
- B. Technical assistance will be provided by on-line help, email, or telephone for all Users throughout the life of the project.

5. SUBMITTALS

- A. Submit to the Construction Manager, within 5 days following the receipt of the letter of intent to award, in an electronic template, the following:
  - 1. Electronic logo of organization (as needed)
  - 2. Names, mailing address and electronic address of its Users and Contacts.
  - 3. Designation the role/responsibility for each User

6. SOFTWARE AND HARDWARE REQUIREMENTS

- A. Each User shall provide and maintain a computer with high speed internet access and an email address. The computer shall have a high speed internet browser (Internet Explorer 8.0 or higher, Firefox version 3.6.12 or higher, Google Chrome or Safari version 5.0 or higher) and a high speed cable Internet access, high speed DSL or T1 line.
- B. License(s) to Use System - Each Contractor will be provided unlimited licenses to use the system for this project. Each license will allow secure unlimited usage from the notice to proceed until the original contract completion date.

7. SYSTEM DESCRIPTION

- A. The web based project management system is a "secure, real-time, interactive, centralized database" specifically established and maintained for the management of this construction project. The product is designed to facilitate communication and improve the time management of its users by facilitating the sharing of information. Information will be available 24/7, from any computer meeting the specifications listed above. The information is fully protected. The electronic platform allows information to be transmitted across the internet reducing printing and postage costs and the time associated with such activities.

- B. The system contains a directory of the project participants.
- C. The system includes templates, with the CM's letterhead, for each document created inside the system. The template allows the use of "pull down" menus to complete significant portions of each document.
- D. The system allows the templates (and attached documents created outside the system) to be distributed to Users and Contacts.
- E. The System contains "translation software" to permit the viewing (and marking) of documents created outside the system. The system can view documents created by different software programs and can deliver images of its translation to any computer meeting the criteria listed above.
- F. The system can be personalized by the Construction Manager to automatically send e-mail notices upon issuance of certain documents if such a practice facilitates the User's business needs.
- G. The system is the product of **Building Blok LLC** ([www.buildingblok.com](http://www.buildingblok.com)) and will be continuously updated.
- H. The Construction Manager will administer the Building Blok User accounts for this project.

8. DOCUMENTS CREATED INSIDE THE SYSTEM

- A. The following documents shall be created on templates inside the system.
  - 1. Transmittals for submittals processed in the system. The transmittals are automatically created by the system when the submittal is uploaded.
  - 2. Submittal Register showing all of the submittals required of the contract, assigned to each Contractor.
  - 3. Submittal Log: The CM will maintain submittal log after it is initialized.
  - 4. RFI (Requests for Information)
  - 5. Change Orders
  - 6. RFP (Requests for Proposal)
  - 7. ASI (Architect's Supplemental Instructions)
  - 8. Tasks & Memos as determined by the CM
  - 9. Payment Applications
  - 10. Closeout Tracking Log
- B. The following documents may, at each Users option, be created on the system.
  - 1. Morning & Afternoon Activity Reports generated by the system
  - 2. E-mails: Contacts that do not have access to the system may be sent information from the system, by the system.

3. Reports of information on the system
4. Project Notices: "Broadcast" messages can be sent to other Users system entry screen.

9. DOCUMENTS CREATED OUTSIDE THE SYSTEM AND DISTRIBUTED BY THE SYSTEM

A. The following documents are expected to be created outside the system and distributed through the system. The actual documents may be scanned or electronically attached to the transmittal.

1. Technical Submittals: Shop drawings, product data, testing reports, certifications, installation instructions, operation & maintenance manuals, will be submitted and distributed through the system. The Architect will return all submissions through the system electronically. The Construction Manager will distribute submittals (after Architect's action) electronically. Contractors may download and distribute submittals to their subcontractors and suppliers or elect to print paper copies for distribution, or both.
2. Photographs: Digital photographs and scanned images can be loaded onto the system and shared.
3. Schedule of Values/ Payment Applications: (The "pencil" review of these documents can occur inside the system).
4. Change Orders: (The "pencil" review of these documents can occur inside the system.)
5. Schedules: The schedule document(s) will be available for review on the system.
6. Data created in other software may be uploaded to the system electronically.

10. DOCUMENTS CREATED OUTSIDE THE SYSTEM AND DISTRIBUTED OUTSIDE THE SYSTEM

A. The following documents are expected to be created outside the system and distributed outside the system. The actual documents may be scanned or electronically attached to the transmittal.

1. Schedules: The Construction Manager will develop the Master Schedule through Microsoft Project 2003. The schedule will be distributed either through hard copies at meetings or through email.
2. Product samples, color samples, physical samples are still required to be provided per the technical specifications, however, the transmittal documenting the distribution shall be done inside the system and submitted electronically and printed to accompany the actual submission.
3. Meeting minutes will be created using Microsoft Word 2003 and distributed through hard copies at meetings or through email.
4. AIA closeout documents, which require an "original" signature, will be created and distributed outside the system.

END OF SECTION

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SECTION 013216 - CONSTRUCTION SCHEDULE

1. PRE-BID CONSTRUCTION SCHEDULE

- A. Time is a critical element of this Project. By entering a bid, the Contractor agrees to adhere to the intermediate Milestone Dates and Dates of Substantial and Final Completion established herein. The Contractor also understands that all work must be performed in an orderly and closely coordinated sequence in order to achieve the specified Milestones and Completion Dates, and the Contractor hereby agrees to perform his work in conformance with the Pre-Bid Construction Schedule established herein, or with the then current and approved Project Construction Schedule as amended from time to time by the Construction Manager.
- B. The Pre-Bid Construction Schedule includes allowances for time lost due to adverse and abnormal weather conditions, other than floods, hurricanes, tornadoes, lightening and other like acts of God. The Contractor understands and agrees that it shall not be entitled to any extensions of the Contract Time or adjustment to the Contract Sum, except as allowed in the General Conditions of the Contract for Construction. The Contractor further acknowledges that the Work may be required to be performed during the winter season, that conditions during this season may be adverse and abnormal, but that such conditions will not be the basis for an extension of the Contract Time or adjustment to the Contract Sum.

2. SCHEDULING OF THE WORK AFTER AWARD OF CONTRACT

- A. After award of Contract, or issuance of a Notice to Proceed, the Contractor will meet with the Construction Manager to review the Pre-Bid Construction Schedule, and the overall project plan for construction. Following the above review the Contractor will meet with each subcontractor and supplier to view the detailed plans for performing his Work. Following these meetings and within fourteen (14) days after award of the Contract or issuance of a Notice to Proceed, the Contractor shall prepare and submit for the Construction Manager's approval a Work Schedule providing for the expeditious, timely and practical execution of the Work. The Contractor's Work Schedule shall include activity descriptions and durations for shop drawings, fabrication, delivery and installation. If the Construction Manager so requests, the Contractor shall provide adequate explanation regarding crew sizes, production rates and similar data used to arrive at the durations and sequences.
- B. The Construction Manager shall review the Contractor's Work Schedule, coordinate it with the separate work by other contractors, the Owner and the Construction Manager, and after coordination, shall incorporate it into the approved Project Construction Schedule. The approved Project Construction Schedule shall be issued to the Contractor and the Contractor shall perform his Work in conformity therewith.
- C. The Contractor shall submit proposed schedule revisions and obtain the written



approval of the Construction Manager therefore before deviating from the Project Construction Schedule.

- C. The Construction Manager will incorporate approved schedule revisions into the Project Construction Schedule, and shall otherwise update and revise the Project Construction Schedule as the Construction Manager, at his sole discretion, deems necessary.

3. ADHERENCE TO THE SCHEDULE

- A. The Contractor shall start each part of its Work on the date designated for start in the approved Project Construction Schedule unless advised by the Construction Manager. The Contractor shall carry the Work forward expeditiously with adequate forces, equipment and materials, and shall complete each part of his work on or before the date designated in the approved Project Construction Schedule.
- B. If the Construction Manager determines that the Contractor is behind schedule, the Construction Manager shall have the right to require that the Contractor take steps, at the Contractor's expense, to accelerate its Work. Such steps shall include increases in manpower, equipment and materials and/or overtime as the Construction Manager may deem necessary. If the Contractor fails to comply with the Construction Manager's instructions relating to improved rate of progress, the Contractor may be held in default under the appropriate provisions of the General Conditions of the Contract.
- C. Each Contractor shall, if directed by the Construction Manager, provide the Construction Manager a 2-week look ahead of anticipated manpower showing the number of men, classification, and anticipated work.

4. PROJECT MILESTONE SCHEDULE

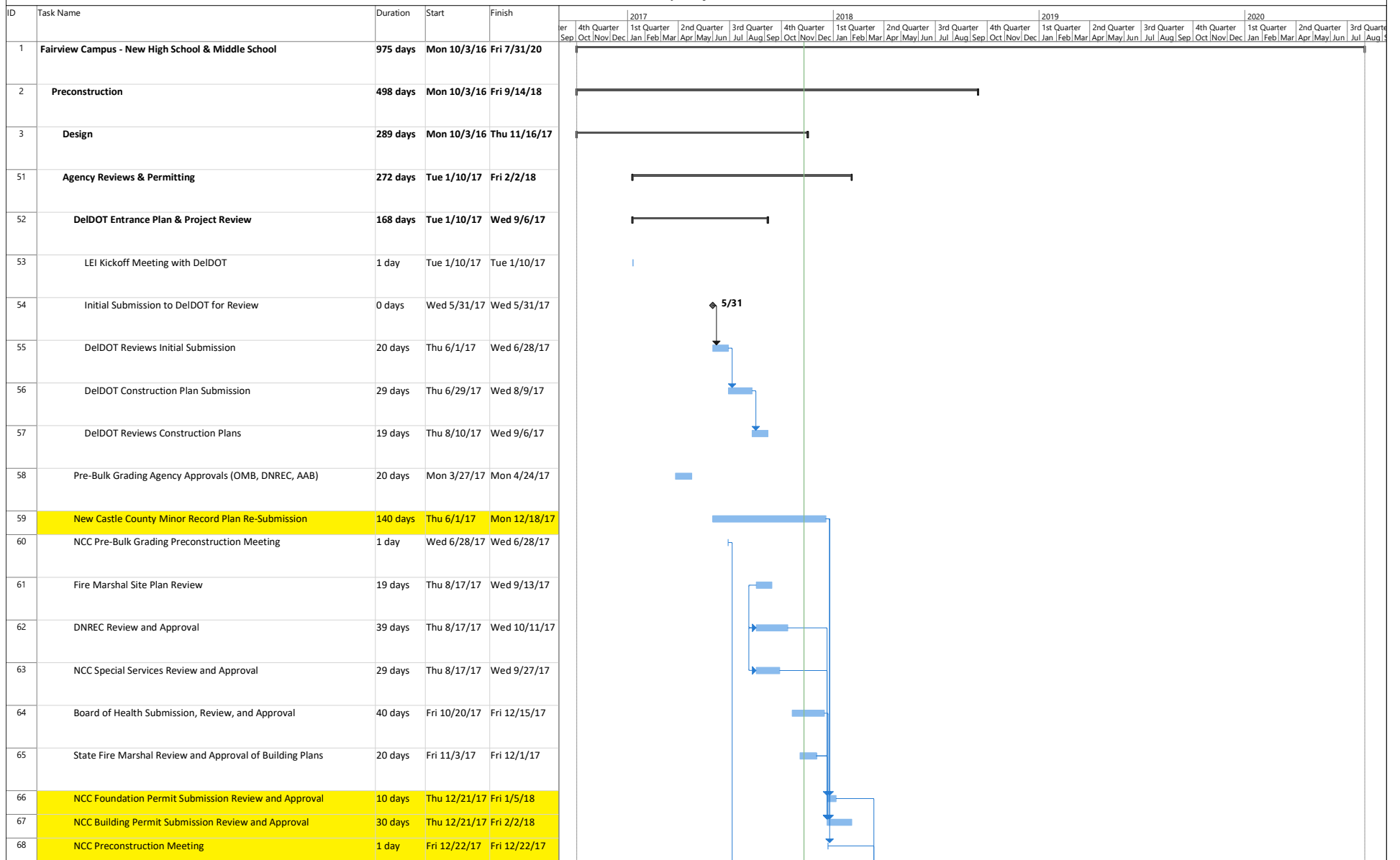
- A. Project Milestone Schedule to be distributed in Addendum #1.

END OF SECTION



Appoquinimink School District  
Fairview Campus  
Preliminary Project Schedule

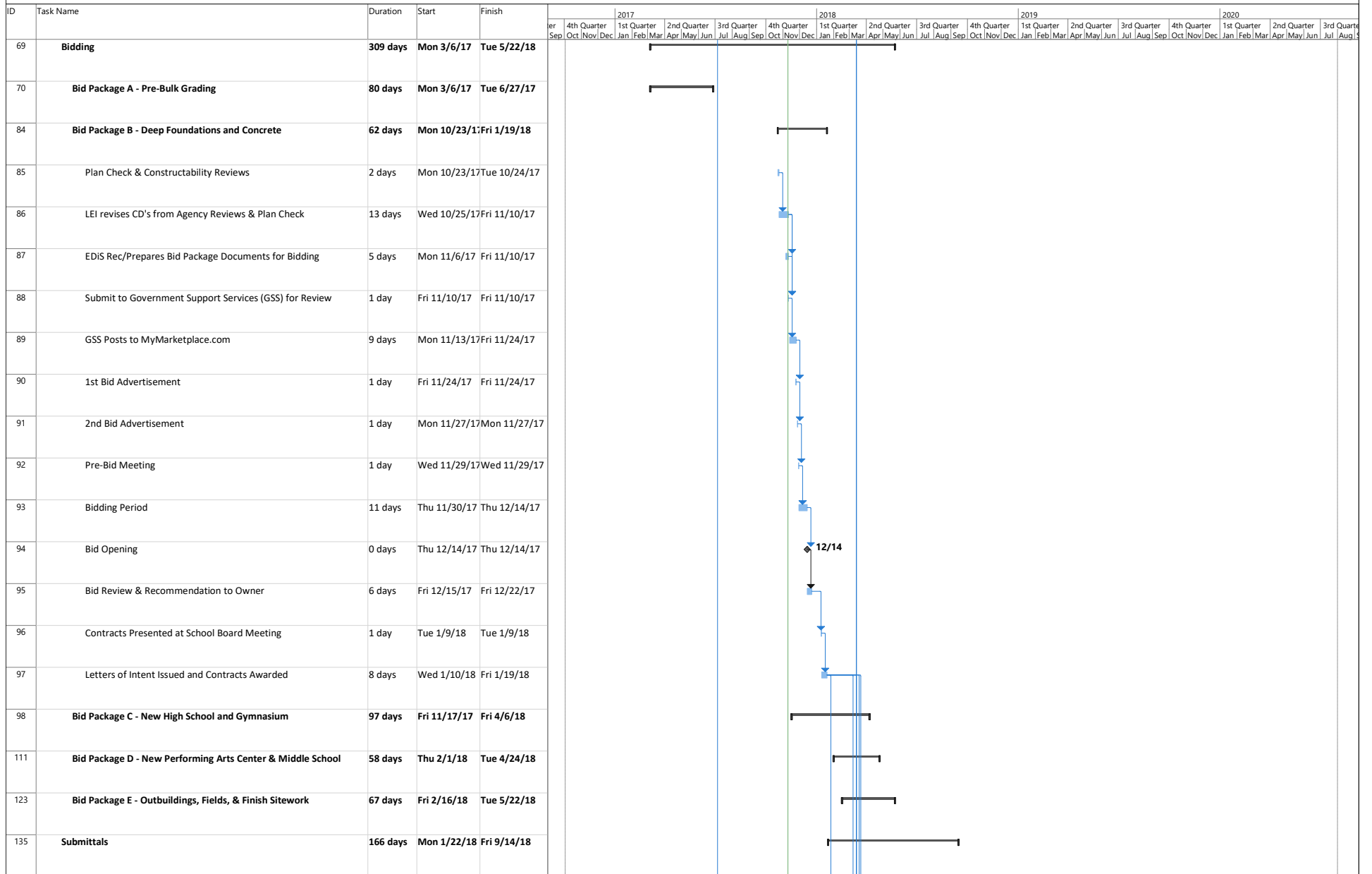
Fri 11/10/17





Appoquinimink School District  
Fairview Campus  
Preliminary Project Schedule

Fri 11/10/17



Project: ASD Fairview Campus B  
Date: Fri 11/10/17

Task

Split

Milestone

Summary

Project Summary

Inactive Task

Inactive Milestone

Inactive Summary

Manual Task

Duration-only

Manual Summary Rollup

Manual Summary

Start-only

Finish-only

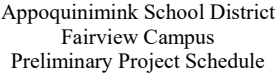
External Tasks

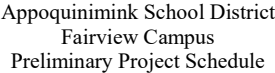
External Milestone




Progress

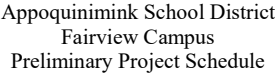
Manual Progress

Page 2

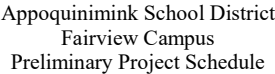


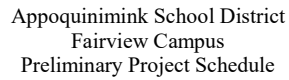


Task		Summary		Inactive Milestone		Duration-only		Start-only		External Milestone		Manual Progress	
Split		Project Summary		Inactive Summary		Manual Summary Rollup		Finish-only		Deadline		Progress	
Milestone		Inactive Task		Manual Task		Manual Summary		External Tasks					



Task	Summary	Inactive Milestone	Duration-only	Start-only	External Milestone	Manual Progress
Split	Project Summary	Inactive Summary	Manual Summary Rollup	Finish-only	Deadline	
Milestone	Inactive Task	Manual Task	Manual Summary	External Tasks	Progress	





ID	Task Name		Duration	Start	Finish	Gantt Chart Timeline																							
						2017				2018				2019				2020											
						er Sep	4th Quarter Oct   Nov   Dec	1st Quarter Jan   Feb   Mar	2nd Quarter Apr   May   Jun	3rd Quarter Jul   Aug   Sep	4th Quarter Oct   Nov   Dec	1st Quarter Jan   Feb   Mar	2nd Quarter Apr   May   Jun	3rd Quarter Jul   Aug   Sep	4th Quarter Oct   Nov   Dec	1st Quarter Jan   Feb   Mar	2nd Quarter Apr   May   Jun	3rd Quarter Jul   Aug   Sep	4th Quarter Oct   Nov   Dec	1st Quarter Jan   Feb   Mar	2nd Quarter Apr   May   Jun	3rd Quarter Jul   Aug   Sep							
229	Interior Finishes and Specialties		166 days	Fri 10/25/19	Fri 6/19/20																								
230	New Field House		309 days	Mon 6/25/18	Wed 9/11/19																								
231	Grade Building Tabletop to Subgrade Elevation		5 days	Mon 6/25/18	Mon 7/2/18																								
232	Layout Foundations and Pile Caps		3 days	Mon 7/2/18	Fri 7/6/18																								
233	Install Timber Piles		18 days	Fri 7/6/18	Tue 7/31/18																								
234	Excavate, Form, and Pour Footers and Foundations		20 days	Tue 9/18/18	Mon 10/15/18																								
235	Install CMU Foundation Walls		19 days	Tue 10/2/18	Fri 10/26/18																								
236	Install Underslab MEP		30 days	Mon 10/15/18	Mon 11/26/18																								
237	Stone and Pour Building Slab-on-Grade		15 days	Mon 11/12/18	Mon 12/3/18																								
238	Install CMU Exterior Back-up Walls		29 days	Tue 12/4/18	Tue 1/15/19																								
239	Install Roof Trusses		15 days	Wed 1/9/19	Tue 1/29/19																								
240	Install Building Roof and Insulation		28 days	Wed 1/30/19	Fri 3/8/19																								
241	MEP Rough-In		30 days	Mon 3/11/19	Mon 4/22/19																								
242	Install Exterior Insulation, Waterproofing, and Face Brick		30 days	Mon 3/11/19	Mon 4/22/19																								
243	Install First Floor Interior CMU Walls		29 days	Mon 4/15/19	Fri 5/24/19																								
244	Install Windows, Curtain Walls, Metal Wall Panels, and Storefronts		15 days	Tue 4/23/19	Mon 5/13/19																								
245	Install First Floor Interior Metal Stud Walls & Ceilings		20 days	Mon 5/13/19	Mon 6/10/19																								
246	Drywall & Finishing		19 days	Tue 6/11/19	Mon 7/8/19																								
247	Interior Finishes and Specialties		50 days	Tue 7/2/19	Wed 9/11/19																								
248	Install Metal Lockers & Athletic Equipment Specialties		35 days	Wed 7/24/19	Wed 9/11/19																								

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SECTION 013219 - SUBMITTAL REGISTER

1. SUBMITTALS/SUBMITTAL REGISTER

- A. The Contractor shall submit all items listed or specified within the sections of the Specifications included in its Work. Submittals shall include such items as: contractor's, manufacturer's or fabricator's drawings; descriptive literature including, but not limited to, catalog cuts, diagrams, operation charts or curves; test reports; samples, operations and maintenance manuals, including parts lists; certifications; warranties and other required submittals. Submittals pertinent to materials and equipment which are subject to advance approval shall be scheduled and made prior to the acquisition or the delivery thereof.
- B. The Contractor shall carefully control procurement operations to assure that each individual submittal is made on or before the dates required for timely performance of its Work.
- C. Within seven (7) days after award of Contract or issuance of Notice to Proceed, the Contractor shall execute and submit to the Construction Manager, seven (7) copies of the Submittal Register, on a form to be provided by the Construction Manager, on which shall be listed each item of equipment and material of each type for which fabricator's drawings and/or related descriptive data, test reports, samples, spare parts, operation and maintenance manuals, or other types of submittals required by the Specifications. The Submittal Register form shall be reproduced by the Contractor. The order of listing of items on the Register shall conform to the sequence of the items as they occur within the divisions. Drawings of component items forming a system or that are interrelated shall be scheduled to be correlated and submitted concurrently. Certifications to be submitted with the pertinent drawings shall be so scheduled. Adequate time shall be allowed for review and approval and possible resubmittal of any item subject to approval, because no delay damages or time extensions will be allowed for time lost in late submittals or resubmittals. The Construction Manager and Architect/Engineer will review the Submittal Register for approval action. The approved Register will become a part of the Contract and Contractor will be subject to requirements thereof. The Contractor shall revise and/or update the Register monthly to take into account all changes in the Contract. Each such revised edition and/or revision to the Register shall be resubmitted to the Construction Manager. This Register shall be coordinated with related submittals of other Contractors.

2. SAMPLES

- A. Submit tagged or labeled samples in triplicate, unless another quantity is otherwise specified by the Construction Manager.
- B. Tags or labels shall be securely affixed and contain as a minimum the following information: Project Name, Contractor's Name, Contract Title and Number, Date, Transmittal Number, Product Manufacturer's or Fabricator's Name and Product Identifier.

END OF SECTION

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SECTION 013226 - SUBCONTRACTOR DAILY REPORTS

1. SUBCONTRACTOR DAILY REPORTS

- A. The Subcontractor shall submit a Daily Report to the Construction Manager on the forms provided covering the following subjects:
1. Work in Progress, including areas where work is being performed, nature of the operations in progress, and the manpower assigned.
  2. Extra Work (Time and Material) in progress.
  3. Materials Received.
  4. Trade labor breakdown including identification of all workers on site and the number of hours (or portions thereof) worked by each.
  5. Inspection Checklist (performed daily).
- B. The Subcontractor shall submit the Daily Report to the Construction Manager by 9:00 AM on the next workday following the workday covered in the Daily Report.

2. DAILY EXTRA WORK REPORT

- A. The Subcontractor shall submit on the form provided a Daily Extra Work Report on each day he performs authorized Extra Work on a time and material basis.
- B. A separate Daily Extra Work Report shall be submitted for each separate authorized Extra Work item done on a time and material basis.
- C. The Subcontractor shall submit his Daily Extra Work Report as an attachment to his Daily Report by 9:00 AM on the next workday following the workday covered in the Daily Extra Work Report.

3. Sample Daily Report

- A. A sample daily report follows this section for your reference.

END OF SECTION

# CONTRACTOR'S DAILY REPORT

Project Name:	<hr/>
Date:	<hr/>
Contractor:	<hr/>
Contract No. & Description:	<hr/>
Weather:	<hr/>
Foreman's Name	(Print) <hr/>

TRADE	*CLASS	MANPOWER COUNT	TOTAL MAN HOURS	TODAY'S DESCRIPTION / LOCATION OF WORK
	<b>TOTAL</b>			

\* INDICATE: F = FOREMAN; J = JOURNEYMAN; A = APPRENTICE

Work Status/Work Planned:

Construction Equipment:

Qualified Operator(s)

Deliveries or Materials:

Machinery, tools, material, and equipment to be used:

Inspection of work area, machinery, tools, material, or equipment

The use of any machinery, tool, material, or equipment which is not in compliance with any applicable requirement is prohibited. Such machine, tool, material or equipment shall either be identified as unsafe by tagging or locking the controls to render them inoperable or shall be physically removed from its place of operation.

Below is a general checklist of requirements on this project. Contractors will check off items that pertain to their contract and project tasks. Notify EDiS Field Manager of any issues. This checklist is not meant to be all inclusive. Please refer to additional OSHA regulations for compliance.

### **House Keeping**

- ☐ Material Storage Area's Orderly
- ☐ Trash Containers Available and Emptied daily
- ☐ Fire Hazards
- ☐ Lighting and ventilation
- ☐ Exits and Stair clear passage
- ☐ Walkways, corridors clear passage
- ☐ Daily debris /trash removal
- ☐ \_\_\_\_\_

### **Personal Protective Equipment**

- ☐ Hard Hats being worn
- ☐ Safety Glasses with side shields being worn
- ☐ Secondary Eye/Face protection
- ☐ Respirators as required
- ☐ Hand protection when needed
- ☐ Ear protection when needed
- ☐ Inspected & Maintained
- ☐ \_\_\_\_\_

### **Fire Prevention**

- ☐ Fire extinguishers inspected
- ☐ Flammable / Combustibles properly store
- ☐ Approved Fuel cans used and labeled
- ☐ Oxygen / Acetylenes stored properly
- ☐ \_\_\_\_\_

### **Electrical**

- ☐ GFI in use
- ☐ Three prong insulated extension cords used
- ☐ Extension cords in good condition
- ☐ Lockout / Tag-out program in use
- ☐ \_\_\_\_\_

### **Excavations**

- ☐ Miss Utility been contacted
- ☐ Properly Barricaded
- ☐ Ladders in use at depths over 4'-0"
- ☐ Ladders every 25'-0" distance
- ☐ Shored, sloped, benched as required
- ☐ Dewatering as needed
- ☐ \_\_\_\_\_

### **Ladders**

- ☐ Good condition
- ☐ Correct pitch
- ☐ Extends 3'-0" above landing
- ☐ Open and secured / tied off
- ☐ \_\_\_\_\_

### **Scaffolds**

- ☐ Certified Scaffold Installer
- ☐ Guardrails, toe boards, and planking secured
- ☐ Appropriate signage
- ☐ Adequate cross bracing
- ☐ Secured to building over 25'-0" in height
- ☐ \_\_\_\_\_

### **Cranes**

- ☐ Rated Load Capacity available in cab
- ☐ Swing Radius barricaded
- ☐ Appropriate certificates / decals / hand signals
- ☐ Daily safety inspection log completed
- ☐ \_\_\_\_\_

### **Fall Protection**

- ☐ Fall protection plan on file
- ☐ Full harness / shock absorbing lanyard used
- ☐ Anchoring points secured
- ☐ Perimeter barricades
- ☐ Open sided floor protection
- ☐ 6'-0" Tie-off utilized
- ☐ \_\_\_\_\_

### **Paperwork**

- ☐ MSDS Information
- ☐ Contractors Safety Program
- ☐ Hazardous Communications Training
- ☐ Hazardous Communications Program
- ☐ Contractor Qualified Representation
- ☐ \_\_\_\_\_

### **Other**

- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_

Foreman / Competent Person:

Print Name \_\_\_\_\_

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SECTION 013300 – SUBMITTAL PROCEDURES

1. GENERAL PROVISIONS

- A. The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary and other Conditions, if any) and Division 1 as appropriate, apply to the Work specified in this Section.

2. ITEMS TO BE SUBMITTED AT START OF WORK

- A. Performance/Labor and Material Payment Bond(s): One (1) copy of each bond simultaneously with the signed Agreement. See General Conditions Article 11.4 and Supplementary Conditions.
- B. Policies or Certificates of Insurance: Two (2) copies simultaneously with the signed Agreement. See General Conditions Article 11 and Supplementary Conditions.
- C. Contractor's License: Submit a copy of all business licenses required by local and state agencies.
- D. Contractor's Schedule of Values: Two (2) copies for approval within 21 days after the Agreement is signed. See General Conditions Article 9.2 and provisions in this Section.
- E. Contractor's Progress Schedule: Two (2) copies for review and reference within 21 days after the Agreement is signed. See General Conditions Article 3.10 and provisions in this Section.
- F. Submittal Schedule: Two (2) copies for review and reference within 21 days after the Agreement is signed. See provisions in this Section.
- G. Products List: Two (2) copies for approval within 30 days after the Agreement is signed. See provisions in Section 016200 - MATERIAL AND EQUIPMENT.

3. NON-RESIDENT CONTRACTOR & SUBCONTRACTORS BONDS

- A. Refer to requirements in Section 011100 - INSTRUCTIONS TO BIDDERS for filing of Surety Bonds with the Division of Revenue.
- B. If such bonds are required on this project, it will be the responsibility of the Contractor to produce evidence to the Construction Manager that they have been filed, or if not required, to supply a notarized statement that they are not required. This must be done within seven (7) days after award of Contract and in any event before construction starts.

4. RELATED REQUIREMENTS

- A. See Section 017700 - CONTRACT CLOSE OUT: for submittal requirements for Contract Close out.

5. SUBMITTALS

- A. All submittals shall be directed to the Construction Manager in the manner directed by the Construction Manager, and paragraph 9 of this section. Contractor shall use the Contractor Submittal Form appended to this section.
- B. Prepare a Submittal's Schedule for Shop Drawings, Product Data and Samples. Show:
1. The dates for Contractor's submittals.
  2. The dates submittals will be required for Owner-furnished products.
  3. The date approved submittals will be required from the Architect.
- C. Should the Architect or Construction Manager elect to omit any items from the list of items to be reviewed, it shall not relieve the Contractor from compliance with the Contract Documents with regard to that item. In such instance, the Contractor may still elect to have submittals prepared for his own use without review by the Architect or Construction Manager.

6. SHOP DRAWINGS

- A. Conform to provisions in General Conditions applying to Shop Drawings.
- B. Present in a clear and thorough manner.
1. Identify details by reference to sheet and details, schedule or room numbers shown on Contract Drawings.
  2. Maximum sheet size: 30" x 42".

7. PRODUCT DATA

- A. Conform to provisions in General Conditions applying to Product Data.
- B. Preparation:
1. Clearly mark each copy to specifically identify products or models pertinent to project.

2. Show performance characteristics and capacities.

3. Show dimensions and clearances required.

4. Show wiring or piping diagrams and controls.

C. Manufacturer's standard schematic drawings and diagrams:

1. Modify drawings and diagrams to delete information which is not applicable to the Work.

2. Supplement standard information to provide information specifically applicable to the Work.

8. SAMPLES

A. Conform to provisions in General Conditions applying to Samples.

B. Provide samples of sufficient size and quantity to clearly illustrate:

1. Functional characteristics of the project, with integrally related parts and attachment devices.

2. Full range of color, texture and pattern.

C. Field samples and mock-ups; See requirements, if any, in other specification Sections.

9. SUBMITTAL REQUIREMENTS

A. Make submittals promptly through the Construction Manager in accordance with published schedule, and in such sequence as to cause no delay in the Work or in the Work of any other contractor.

B. Number of submittals required.

1. Shop drawings: Submit eight (8) copies for each submittal. Copies will be marked up with corrections and comments, stamped and returned. Any additional copies required by the Contractor shall be made by him.

2. Product Data: Submit a clear .pdf scan of each submittal on to Building Blok. Scanned shop drawings will be marked up with corrections and comments, stamped and returned. Any additional copies required by the Subcontractor shall be made by him from the returned scan.

3. Samples: Submit three (3) each. Submit a scanned picture of the submittal on to



Building Blok with a transmittal document showing the date sent to the construction manager. When approved it will be returned to the Construction Manager to be retained at the site for reference use.

C. Submittals shall contain:

1. The date of submission and the dates of any previous submissions.
2. The Project title and number.
3. Contract identification.
4. The names of the Contractor, Supplier and Manufacturer.
5. Identification of the product, with the specification section number.
6. Field dimensions, clearly identified as such.
7. Relation to adjacent or critical features of the Work or materials.
8. Applicable standards, such as ASTM or Federal Specification numbers.
9. Identification of deviations from Contract Documents.
10. Identification of revisions on resubmittals.
11. An 8 inch x 3 inch blank space for Contractor and Architect's stamps.
12. Contractor's stamp, initialed or signed, certifying review of submittal, verification of products, field measurements and field construction criteria, and coordination of the information within the submittal with requirements of the Work and of Contract Documents. Submittals which have not been stamped with this stamp or its approved equivalent will be returned without being reviewed.

D. Shop Drawing coordination and interface with work of other Contracts and adjacent work is the responsibility of each individual Contractor.

E. All submittals shall be accompanied by the contractor's submittal form, a copy of which is part of this section. The contractor's submittal form must be completed in its entirety by the contractor.

10. RESUBMISSION REQUIREMENTS

A. Make any corrections or changes in the submittals required by the Architect and resubmit until approved.

B. Shop drawings and Product Data:

1. Revise initial drawings or data, and resubmit as specified for the initial submittal.
2. Indicate any changes which have been made other than those requested by the Architect.

C. Samples: Submit new samples as required for initial submittal.

11. FINAL DISTRIBUTION OF APPROVED SUBMITTALS

- A. The Construction Manager will receive and log submittals and forward to Architect after processing.
- B. The Construction Manager will distribute copies of Shop Drawings and Product Data which carry the Architect's stamp to:
  1. Contractor that made submittal.
  2. Jobsite File.
  3. Record Document File.
  4. Other Contractors, as required for coordination.
- C. The Construction Manager will distribute samples as required.
- D. The Contractor will distribute copies of Shop Drawings and Product Data which carry the Architect's stamp to:
  1. Subcontractors.
  2. Suppliers.
  3. Fabricators.

12. SCHEDULE OF VALUES

- A. Input online using Building Blok version of AIA Document G703, Continuation Sheet to G702.

13. PROGRESS SCHEDULE

- A. Prepare schedules in the form of a horizontal bar chart.

1. Provide separate horizontal bar chart for each trade or operation.
  2. Horizontal time scale: Identify the first work day of each week.
  3. Scale and spacing: To allow space for notations and future revisions.
  4. Minimum sheet size 11 inches by 17 inches.
- B. Format of listings: The chronological order of the start of each item of work.
- C. Show the complete sequence of construction by activity.
- D. Show the dates for the beginning, and completion of, each major element of construction such as:
1. Site clearing.
  2. Site utilities.
  3. Foundation work.
  4. Structural framing.
  5. Subcontractor work.
  6. Equipment installation.
- E. Show projected percentage of completion for each item as of the first day of each month.
- F. Update Progress Schedule monthly and submit with Application for Payment and Schedule of values.
- G. Indicate progress of each activity to date of submission.
- H. Show changes occurring since previous submission of schedule:
1. Major changes in scope.
  2. Activities modified since previous submission.
  3. Revised projections of progress and completion.
  4. Other identifiable changes.

- I. Provide a narrative report as needed to define:
  - 1. Problem areas, anticipated delays and the impact of the schedule.
  - 2. Corrective action recommended, and its effect.
  - 3. The effect of changes on schedules of other prime contractors.
- J. Submit one reproducible transparency.
- K. After review, distribute copies of the schedule to:
  - 1. Jobsite File.
  - 2. Subcontractors.
  - 3. Architect.
  - 4. Owner.
- L. Instruct recipients to report promptly to the Contractor, in writing, any problems anticipated by the projections shown in the schedules.

END OF SECTION

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SECTION 013500 – CONTRACTOR EMPLOYEE BACKGROUND CHECK

1. It is the Contractor's responsibility to perform background checks and screen all employees working onsite. The background check must include checking for a previous history of Child Abuse Convictions, Child Molestation Convictions, Felony Convictions, and Drug Convictions within the last 5 years. Any employee with any of these convictions may not enter the job site or school campus. This background check must be completed and screened by the contractor prior to an employee entering the job site. The background check cannot be any older than 1 year prior to the date of the contract between the Contractor and the Owner. The Construction Manager, the Owner's representative and the Owner have the right to request that the screening data be submitted on a case-by-case basis.
2. The contractor is required to provide the Construction Manager written notice verifying background checks were completed and screened by the contractor prior to an employee entering the job site. This notice will contain the individual's name and the last four digits of their social security numbers. Notices must be received no later than two (2) working days before access is required. Notices will be forwarded electronically to the Construction Manager. A sample notice follows this section for your reference.

END OF SECTION

Date

Project Manager  
EDiS Company  
110 South Poplar Street  
Wilmington, DE 19805

RE: INSERT PROJECT NAME - Certification of Background Checks

Dear \_\_\_\_\_:

This letter is to certify that background checks have been completed in accordance with Section 013500 Contractor Employee Background Check. The following individuals are certified as having met the requirements of the specification:

<u>Name</u>	<u>Last 4 SSN</u>
Mr. John Smith	1234

If you require any additional information you may contact INSERT POINT OF CONTACT, PHONE NUMBER AND EMAIL ADDRESS.

Sincerely,

Company

NAME  
TITLE

SECTION 013523 - SAFETY PROGRAM

1. GENERAL

- A. The Contractor shall be responsible for initiating, maintaining and supervising all safety activities and programs in connection with the Work.
- B. Contractor shall be responsible for the safety of its personnel.
- C. Hard hats and safety glasses must be worn by all personnel on the jobsite, except in contractor's administrative office/trailer. All equipment must comply with OSHA standards. All job site personnel shall wear long pants, shirts (no tank tops), high visibility garments, and work boots.

2. SAFETY PROGRAM

- A. Prior to commencing the Work, the Contractor shall submit to the Construction Manager (1) electronic copy and (1) bound copy of its safety program and one (1) copy of MSDS information in a 2" ringed notebook. One paper copy of the safety program and MSDS will be retained by the Construction Manager in the field office.
- B. The safety program shall outline those hazards peculiar to the Contractor's Work, and the steps to be taken to eliminate or reduce the risk of injury or loss due to those hazards. **The program shall be site specific.** Contractor shall implement and enforce its safety program, which is in accordance with all OSHA, Federal, State and local laws.
- C. Contractor shall designate a qualified Safety Supervisor to implement the safety program. Unless otherwise approved by the Construction Manager, the Safety Supervisor shall be the Contractor's field Superintendent/Foremen.
- D. **Contractor shall furnish the names and qualifications of the competent persons and qualified persons who may be required for their scope of work by the Contractor's safety procedures, and by federal, state and/or local regulations. Examples include competent persons and/or qualified persons for steel erection, excavation, scaffold erection, confined space entry, crane and rigging operations, annual crane inspections, fall protection including horizontal lifeline systems, etc.**
- E. **The employer shall verify compliance by preparing a written certification record. The written certification record shall contain the name or other identity of the employee trained, the date(s) of the training and the signature of the person who conducted the training or the signature of the employer. If the employer relies on training conducted by another employer or completed prior to the effective date of**

**this section, the certification record shall include the date the employer determined the prior training was adequate rather than the date of actual training.**

- F. Copies of any and all documents, including information stored electronically, such as safety and health program handbooks and training certification records.**

- 1. The employer shall instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury. Please forward certification (document) of training for each employee on an EDiS project. The latest training certificate shall be maintained.**

- G. Contractor Daily Reports with Safety Inspection Checklist will be submitted daily to Field Manager, verifying inspection of work area, machinery, equipment and tools.**

- H. Prior to starting work on-site, the Contractor shall arrange with the on-site Field Manager to have their employees complete the EDiS Company Zero Accidents Safety Orientation program.**

- I. Contractor shall hold weekly safety toolbox talks with all of its employees every Monday at 12:30 PM. The Contractor shall designate a responsible, capable person to conduct these meetings. Contractor's safety supervisor or superintendent must submit to the Construction Manager weekly toolbox talks attendance sheets and the topics discussed.**

**3. SUBSTANCE ABUSE POLICY STATEMENT**

The Construction Manager is committed to providing a safe work site environment for its employees and Contractors' employees. The Construction Manager does not condone or permit employees and Contractors' employees to use or be under the influence of drugs or alcohol while they are on any of the Construction Manager work sites. The Policy is as follows:

- A. It is a violation of the Construction Manager's policy for employees and Contractors' employees to use, possess, sell, trade, or otherwise engage in the use of illegal drugs and alcohol.**
- B. It is a violation for employees and Contractors' employees to report to work while influenced by illegal drugs or alcohol.**
- C. It is a violation for employees and Contractors' employees to use prescription drugs**



illegally (i.e. to use prescription drugs that have not been legally obtained) and to use prescription drugs in a manner other than the prescribed intentions.

- D. Employees and Contractors' employees who are taking medication, which is prescribed by their physician, are expected to discuss potential side effects with their prescribing physician, as it relates to the work requirements.

Violations of this policy will require disciplinary action. If any employees or Contractors' employees are observed or suspected of being influenced by drugs or alcohol, they will be instructed to stop work and may be required to leave the work site.

#### 4. EXECUTION

- A. Contractor shall comply with all applicable federal, state and local laws, regulations and orders relating to occupational safety and health, and related procedures, and shall, to the extent permitted by law, indemnify and hold Construction Manager, Owner and Architect, and their respective directors, officers, or agents and employees, harmless from any and all liability, public or private, penalties, contractual or otherwise, losses, damages, costs, attorney's fees, expenses, causes of action, claims or judgments resulting from a claim filed by anyone in connection with the aforementioned acts, or any rule, regulation or order promulgated thereunder, arising out of the Contractor's Work, this Agreement or any subcontract executed in prosecution of the Work. Contractor further agrees in the event of a claim of violation of any such laws, regulations, orders or procedures arising out of or in any way connected with the performance of this agreement, Construction Manager may immediately take whatever action is deemed necessary by Owner and/or Construction Manager to remedy the claim or violation. Any and all costs or expenses paid or incurred by Owner and/or Construction Manager in taking such action shall be borne by Contractor, and may be deducted from any payments due Contractor.
- B. The Contractor agrees to (1) take all necessary steps to promote safety and health on the job site; (2) cooperate with Owner and/or Construction Manager and other Contractors in preventing and eliminating safety and health hazards; (3) train, instruct and provide adequate supervision to ensure that its employees are aware of, and comply with, applicable Federal and State safety and health laws, standards, regulations and rules, safe healthful work practices and all applicable safety rules, regulations and work practices and procedures (4) not create any hazards or expose any of its employees, employees of the Owner and/or Construction Manager or employees of Contractors to any hazards; and (5) where the Contractor is aware of the existence of a hazard not within its control, notify the Construction Manager of the hazard as well as warn exposed persons to avoid the hazard.

- C. The Contractor's Superintendent or Safety Supervisor shall immediately, verbally report, and promptly thereafter confirm in writing to the Construction Manager any unsafe conditions or practices that are observed, or violations of job safety which are not within the Contractor's control.
- D. Contractors shall immediately, verbally report, and promptly thereafter confirm in writing, to the Construction Manager any unsafe practices or conditions that are observed which are not under the Contractor's control.
- E. The Contractor's Superintendent or Safety Supervisor shall ensure that adequate first aid supplies are available, and that personnel are qualified to administer first aid/CPR, as required by State and/or Federal regulations.
- F. Contractor shall promptly notify Construction Manager of any personal injury requiring medical treatment of any of the Contractor's employees at the Project site; or of significant damage to property arising in connection with Contractor's performance, as promptly as possible after the occurrence of such injury or damage. Within twenty-four hours of such occurrence, Contractor shall furnish to Construction Manager a complete written report of such injury or damage.
- G. Contractor certifies that the forgoing terms shall be made applicable to all Contractors' suppliers, materialmen or anyone furnishing labor and/or materials to the site.
- H. The Contractor shall continue to educate his job Safety Supervisor or Superintendent of their responsibilities, which shall include:
  - 1. Instructing workers and subcontractors under its supervision in safe work practices and work methods at the time they are given work assignments.
  - 2. Ensuring that its workers and subcontractors have and use the proper protective equipment and suitable tools for the job.
  - 3. Continuously checking to see that no unsafe practices or conditions are allowed to exist on any part of his job.
  - 4. Acquainting its workers and subcontractors with all applicable safety requirements and seeing that they are enforced.
  - 5. Setting a good example for his workers.
  - 6. Making a complete investigation of accidents to determine facts necessary to take corrective action.

7. Promptly completing a "Supervisor's Investigation Form" with his Supervisor's assistance and distributing as required. This form will be provided by the Construction Manager.
8. Holding weekly "tool box" safety meetings with his men to:
  - a. Discuss observed unsafe work practices or conditions including a review of current Construction Manager safety report.
  - b. Review the accident experience of his crew and discuss correction of accident causes.
  - c. Encourage safety suggestions from his men.
9. Seeing that prompt medical treatment is administered to an injured employee.
10. Correcting or reporting immediately to job superintendent any observed unsafe conditions, practices or violations of job security.
11. Making all reports required by these Contract Documents to the Construction Manager in a full and timely fashion.

5. SAFETY MEETINGS

- A. The Contractor's Project Manager or Superintendent shall attend weekly or biweekly supervisory job meetings. The first topic of these meetings will be job site safety. The weekly safety reports will be reviewed and violations must be corrected immediately. Contractors will be encouraged to participate in the on-going jobsite safety.

6. TOOL BOX SAFETY MEETINGS

- A. The Contractor shall schedule weekly "tool box" safety sessions to be held by his job safety supervisor or superintendent for all of his employees.
- B. A member of the Contractor's management staff shall periodically attend "tool box" safety sessions to evaluate their effectiveness and offer any appropriate suggestions for improvement.

7. REPORTS

- A. Contractors shall report all accidents or injuries on a timely basis in accordance with all applicable regulations.

- B. Contractors shall promptly complete an accident investigation report of all accidents.
- C. A record of all "tool box" safety sessions shall be made and submitted to the Construction Manager on forms to be provided.

8. SAFETY REPRESENTATIVE

- A. The Construction Manager may employ the services of a Safety Representative on the project.
- B. The Safety Representative *will* visit the job site on a weekly basis to determine if the work is being performed in a safe manner and in accordance with OSHA, State and Local safety regulations. Safety representative is not responsible for observing and documenting all possible safety violations. The Contractor's Safety Representative or Superintendent shall attend job site safety inspections with the Safety Representative on a weekly basis.
- C. The Safety Representative will file a written report with the Construction Manager at the end of each inspection listing the safety violations observed during the inspection.
- D. The Construction Manager will distribute the Safety Representative's report to all Contractors. All safety violations must be corrected immediately.

9. RIGHT TO STOP THE WORK DUE TO SAFETY VIOLATIONS

- A. The Construction Manager, in its sole discretion, may order the Contractor to stop the work due to safety violations under the following circumstances:
  - 1. If the Construction Manager observes the Contractor is violating safety regulations and the Contractor takes no immediate action to correct the violation.
  - 2. If the Contractor has been notified by the Construction Manager in writing that he is in violation of safety regulations and fails to take action to correct the violation within 24 hours of the notice.
- B. If the Construction Manager directs the Contractor to stop the work due to safety violation, it will be done in accordance with the General Conditions of the Contract. Contractor shall not be permitted an adjustment of the Contract Time or Sum for the days lost to any suspension of work.

- C. If the Construction Manager or Safety Representative observes Contractor's employee

violating this safety program or OSHA Standards in an habitual manner, or creating a serious life safety violation, the Construction Manager or Safety Representative may instruct the Contractor's superintendent or foreman to remove the violator from the work site for failure to comply with the safety program and the contract.

10. EMERGENCY PROCEDURES

- A. The Construction Manager shall establish a central meeting location for the assembly of all Contractors' employees in the event of a major job site emergency.
- B. Contractor shall assemble all of their personnel and account for all employees. Contractor must immediately report to the Project Superintendent with the status of their employees.

11. FALL PROTECTION PROCEDURES

- A. Contractor is responsible, in accordance with federal, state, local laws and regulations including OSHA, to provide and enforce their own site specific fall protection program and equipment. The following fall protection procedures shall be enforced by all Contractors as a minimum standard.

All workers on walking/working surfaces with unprotected sides or edges six feet (6') or higher above the next lower level must be protected from falls by the use of guardrail systems, net systems, fall arrest systems or control access zone programs. It is intended that when fall protection is required, it is required 100% of the time. All contractors are reminded that relevant industry regulations require that contractors comply with the following standards.

- 1. Workers constructing or working near leading edges must be protected.
- 2. Workers on the face of formwork or reinforcing steel must be protected at a height of 6 feet (6') or greater.
- 3. Scaffolds shall be guarded at 6 feet (6') above next lower level.
- 4. Brick layers performing overhand bricklaying and related work six feet (6') or higher above lower levels must be protected from falls.
- 5. Roofers must comply with OSHA standards for roof work.
- 6. The Contractor's controlled access zone plan shall be included in their site-specific safety program and shall be submitted prior to the start of work. Contractors are

responsible for assuring programs are OSHA compliant.

7. Guidelines for Residential Construction or any interpretations will not be accepted in lieu of 1926 Standards.
  8. Contractors must provide certification per OSHA CFR29 § 1926.503(b) of employee training and retraining on fall protection upon request.
- B. Contractor shall provide its own fall protection. Fall protection may be provided by guardrail systems, net systems, or personal fall arrest systems. All fall protection systems must comply with OSHA standards.
- C. Stepladders, exposed to shafts or edges of the building, greater than six feet (6') above the next lower level, must be tied off or otherwise secured. Employee must wear fall protection, i.e. harness/lanyard.
- D. The Safety Cable System shall not be altered or removed without a written request submitted to the Project Manager with a copy to the Field Manager. It shall be the responsibility of each and every Contractor that is removing or altering the Safety Cable System to maintain the fall protection safety provided by the safety cable and not leave the area unprotected. Each and every Contractor shall be responsible to re-install the Safety Cable System immediately after work is completed. Each and every Contractor shall be responsible to re-install the Safety Cable System in accordance to OSHA standards.
- E. Fall protection will be enforced for Structural Steel Erectors.
1. As for a Contractor engaged in structural steel erection, the Contractor is specifically advised that structural steel erectors shall comply with all protection requirements for all work at a height of six feet (6') or greater above the next lower level, 100 percent of the time, by any of the following means.
    - a. Standard guardrail system.
    - b. Personal Fall Arrest System (PFAS) – full body harness with shock absorbing lanyard. Maximum free fall distance permitted, with lanyard and lanyard attachment shall not exceed six feet (6'). Anchor point must be capable of supporting five thousand pounds. Perimeter guard cables or alignment cables may not be used for anchor points.
    - c. Access to work area shall be provided by ladders. There shall be sufficient number of ladders available to reduce the amount of “beam walking.” When

it is absolutely necessary to traverse a beam, 100% fall protection must be utilized.

- d. Steel erection Contractors must, at all times, be able to certify in writing that each of his employees has been properly trained in both OSHA fall protection standards and the Contractor's site specific project fall protection procedures.
- e. Prior to the erection of the steel, the Contractor shall meet with the Project Manager and Safety Representatives to review and document site specific procedures.

12. AIRBORNE CONTAMINENTS PROCEDURES

- A. Contractor must provide and use equipment furnished with Exhaust Purifiers / Scrubbers when any equipment produces airborne containments and will be used in an enclosed building.
- B. The Contractor shall verify air quality by the use of air monitoring equipment and document such verified air quality on the daily report. The monitoring equipment shall, at a minimum, be designed with an auditory alarm and shall provide continuous monitoring of these four gases: Oxygen, Hydrogen Sulfide, Carbon Monoxide and Combustible gases.
- C. The Contractor must provide administrative or engineering controls to protect its workers from exposure to occupational health, environmental or other hazards to be implemented whenever feasible. When such controls are not feasible to achieve full compliance, protective equipment or other protective measures shall be used to keep the exposure of employees to air contaminants within the limits prescribed by local, state, and federal regulations. Any equipment and technical measures used for this purpose must first be approved for each particular use by a competent industrial hygienist or other technically qualified person. Whenever respirators are used, their use shall comply with 1926.103.

13. CELL PHONE AND RADIO USE POLICY

- A. Use of cell phones on EDiS Company projects should be limited to non-construction type activity areas and away from active construction areas (e.g. project office). This includes both cell phone use and the review of data, information, texts, and the internet. Except in an emergency circumstance, phones should only be used in the

designated areas. Anyone observed using a cell phone outside of these designated areas without regard to maintaining a safe focus on their surroundings can be subject to discipline, up to and including removal from the project. Use of ear buds, ear phones, and portable radios are absolutely prohibited on EDiS Company project sites. Anyone using ear buds, ear phones, or any other device that would prevent the wearer from receiving auditory cues about the surrounding environment will be subject to discipline, up to and including removal from the project.

END OF SECTION



## CONTRACTOR

### COMPETENT / QUALIFIED PERSON DESIGNATION LOG

Project:

Field Manager:

Contract: Contractor:	Applicable to Subcontractor ( yes / no)		Foreman	Competent Person (if not foreman)
<b>Subpart C-General Provisions</b>				
1926-20 General Safety				
<b>Subpart D - Health and Environmental Controls</b>				
1926-53 Ionizing Radiation				
1926-55 Gases, Vapors, Fumes, Dusts, Mists				
1926-57 Ventilation				
1926.59 Hazard Communication				
1926.62 Lead				
<b>Subpart E - Personal Protective Equipment</b>				
1926.101 Hearing				
1926.103 Respirator Protection				
<b>Subpart H - Materials Handling, Storage</b>				
1926.251 Rigging Equipment for Material Handling				
<b>Subpart J - Welding and Cutting</b>				
1926.354 Welding, Cutting and Heating				
<b>Subpart K - Electrical</b>				
1926.404 Wiring Design and Protection				
<b>Subpart L - Scaffolding</b>				
1926.451 Scaffolding				
<b>Subpart M - Fall Protection</b>				
1926.502 Fall Protection Criteria and Practices				
1926.503 Training				
<b>Subpart N - Cranes, Derrick -Redesignated 1926.1501</b>				
<b>Subpart O - Motor Vehicles and Equipment</b>				
1926.601 Motor Vehicles				
<b>Subpart P - Excavations</b>				
1926.651 Specific Excavation Requirements				
1926.652 Requirements to Protective Systems				
<b>Subpart S - Tunnels, Shafts, Caissons</b>				
1926.800 Tunnels, Shafts, Caissons				
1926.803 Compressed Air				
<b>Subpart T - Demolition</b>				
1926.850 Preparatory Operations				
1926.852 Chutes				
1926.859 Mechanical Demolition				
<b>Subpart V - Power Transmission and Distribution</b>				
1926.955 Overhead Lines				
<b>Subpart X - Stairways and Ladders</b>				
1926.1053 Ladders				
1926.1060 Training Requirements				

Contract: Contractor:	Applicable to Subcontractor ( yes / no)		Foreman	Competent Person (if not foreman)
<b>Subpart Z - Toxic and Hazardous Substances</b>				
1926.1101 Asbestos				
1926.1101 thru 1926.1148 Toxic and Hazardous Substances				

I certify that the listed employees are competent persons, as defined and required by specific OSHA standards. They are capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

\_\_\_\_\_  
Name (print)

\_\_\_\_\_  
Contractor Signature

\_\_\_\_\_  
Date

PU09, Revised 3/2012

### **Certification of Training Documents to be Submitted with Safety Policy/Program**

Provide a certification of training for employees on your safety program.

In addition, Contractor shall provide certification of training on the following programs, as they pertain to your contract and project tasks. Certification of training must include: Employee's name, date of training, person conducting the training, topics covered, and a statement that the student has successfully completed the course. This list is not meant to be all inclusive: please refer to OSHA regulations for applicable safety requirements.

- a. ☐ Scaffold: 1926.454
- b. ☐ Fall Protection 1926.503
- c. ☐ Crane Operator: 1926.1427
- d. ☐ Signal person (this is for any persons connecting material or equipment for lifting):  
1926.1428
- e. ☐ Crane maintenance: 1926.1429
- f. ☐ Steel erection fall protection: 1926.761
- g. ☐ Respiratory protection (medical clearance and training records complying with 1910.134
- h. ☐ Powder-actuated tools: 1926.302
- i. ☐ Motor Vehicles (are those vehicles that operate within an off-highway jobsite, not open to public traffic): 1926.21

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SECTION 014500 - QUALITY CONTROL

1. DESCRIPTION

- A. Quality control services include inspections and tests performed by independent agencies and governing authorities, as well as by the Contractor. Inspection and testing services are intended to determine compliance of the work with requirements specified. Specific quality control requirements are specified in individual specification sections.

2. RESPONSIBILITIES

- A. Contractor Responsibilities: Except where indicated as being the Owner's responsibility, quality control services are the Contractor's responsibility, including those specified to be performed by an independent agency and not by the Contractor. The Contractor shall employ and pay an independent agency, testing laboratory or other qualified firm to perform quality control services specified.

1. The Owner will engage and pay for services of an independent agency to perform the inspections and tests that are specified as Owner's responsibilities.

- B. Retest Responsibility: Where results of inspections or test do not indicate compliance with Contract Documents, retests are the Contractor's responsibility.

- C. Responsibility for Associated Services: The Contractor shall cooperate with independent agencies performing inspections or test. Provide auxiliary services as are reasonable. Auxiliary services include:

1. Provide access to the Work.
2. Assist taking samples.
3. Deliver samples to test laboratory.

- D. Coordination: The Contractor and independent test agency shall coordinate the sequence of their activities and shall avoid removing and replacing work to accommodate inspections and test. The Contractor is responsible for scheduling time for inspections and tests.

- E. Qualifications for Service Agencies: Contractor shall engage only inspection and test service agencies which are pre-qualified as complying with "Recommended Requirements for Independent Laboratory Qualification" by the American Council of Independent Laboratories.

- F. Submittals: Contractor shall submit a certified written report of each test, Inspection

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or similar service, in duplicate to the Construction Manager. Contractor shall submit additional copies of each report to any governing authority, when the authority so directs.

- G. Report Data: Written inspection or test reports shall include:
1. Name of testing agency or test laboratory.
  2. Dates and locations of samples, tests or inspections.
  3. Names of individual present.
  4. Complete inspection of test data.
  5. Test results.
  6. Interpretations.
  7. Recommendations.
- H. Repair and Protection: Upon completion of inspection or testing, Contractor shall repair damaged work and restore substrates and finishes. Contractor shall comply with requirements for "Cutting and Patching."
- I. The 2000 IBC code the following testing is code required:
1. Structural tests and special inspections must be conducted by an approved agency (an agency or firm regularly engaged in conducting tests or furnishing inspection services, approved by the authority having jurisdiction.) This means that contractors will no longer be allowed to cast their own test cylinders for example.
  2. Continuous special inspection (the full-time observation of work by an approved special inspector who is present until completion of the work) is required for any steel welds and connections. Critical elements may include: all slip critical bolted connections, complete and partial groove welds, multi-pass fillet welds and single pass fillet welds greater than 5/16".
  3. Continuous special inspection is required during the placement of all concrete and shotcrete for the proper application techniques with a few exceptions.
  4. Periodic special inspection (the part-time observation by an approved special inspector) is required for any steel welds and connections. Critical elements may include: all slip critical bolted connections, complete and partial groove welds, multi-pass fillet welds and single pass fillet welds greater than 5/16".

5. Spray applied fireproofing requires periodic special inspection for the structural member surface conditions, application, thickness, density and bond strength.
6. Based on the classification, occupancy, and design of the structure, the code requires periodic special inspection for placement of masonry units and reinforcing steel and continuous special inspection of grout placement.

END OF SECTION

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SECTION 015200 - CONSTRUCTION FACILITIES & TEMPORARY CONTROLS

1. GENERAL

A. DESCRIPTION

1. Construction Manager and Contractors shall provide all temporary facilities throughout the construction period unless otherwise indicated in the Contract Documents.
2. Construction Manager and Contractors shall pay all costs for providing, maintaining and removing of all temporary facilities unless otherwise indicated in the Contract Documents.

2. FACILITIES

A. TEMPORARY SANITATION FACILITIES

1. Construction Manager will provide and maintain sanitary facilities for all personnel on the project.
2. The number of sanitary facilities required shall be based on the total number of workers employed on the site and shall be in accordance with the provisions of the applicable code.
3. Construction Manager will maintain sanitary facilities in a sanitary and clean condition at all times.

B. TEMPORARY WATER

1. Drinking Water: Contractor shall provide potable water for drinking purposes for all his personnel on the site. Contractor shall furnish disposable drinking cups at water stations. Each water station shall be equipped with a suitable trash container for disposal of the drinking cups.
2. Construction Water: Construction Manager will not provide and maintain tap locations for construction water. Construction water shall be the responsibility of the contractor.

C. TEMPORARY TELEPHONES

1. Construction Manager will not provide any telephones or fax machines for Contractor's personnel. Each Contractor is responsible for its own phones and fax machines.

D. FIELD OFFICE

1. During the period of the Work and until final acceptance of the project, the Construction Manager will provide a weatherproof building for the Construction Manager's Field Project Manager(s) and Superintendent(s). Contractor shall make provisions for its own field office, subject to approval by the Construction Manager.

E. FIRE PROTECTION

1. The Carpentry Contractor will provide and maintain portable fire extinguishers on each floor level and building area. Number to conform to applicable codes.
2. Contractor shall provide additional fire extinguishers as required by OSHA regulations for its work.
3. Fire extinguishers shall be 10lb, Multi-Purpose (ABC) dry chemical, UL labeled, with a rating of 3a:40bc.

F. ACCESS ROADS AND PARKING AREAS

1. The Sitework Contractor will provide and maintain access roads on the site.
2. Neither the Construction Manager nor the Owner will provide parking for Contractor's personnel on or about the project site. All parking provisions required for Contractors will be solely the responsibility of the Contractors or their personnel.

G. STORAGE AREAS

1. The Construction Manager will assign storage areas on the site. Storage areas are limited and will be assigned in a manner which will best facilitate the work.
2. Contractor shall provide all other storage space required for its work at off-site locations.
3. All combustible or flammable materials must be safely stored in a secured area in strict accordance with regulations, codes and laws enforced by local, State or Federal agencies, which so ever is the most stringent.

H. FIRST AID STATION

1. The Contractor's Superintendent or Safety Supervisor shall insure that adequate first aid supplies are available, and that personnel are qualified to administer first aid/CPR, as required by State and/or Federal regulations.



I. SECURITY

1. The Construction Manager will not provide the security measures at the site.
2. All security measures shall be the responsibility of each Contractor. These measures shall include but are not limited to the provision of secured storage for tools, construction equipment, and materials and equipment scheduled for installation in the building.

J. BENCH MARKS AND BASELINE

1. The Construction Manager will lay out and establish and maintain bench marks and baselines.
2. The Contractor shall lay out his own work and shall be responsible for the accuracy of same.
3. Contractor shall check grades, lines, levels and dimensions as shown on the drawings and shall promptly report errors or inconsistencies in same to the Construction Manager before Work proceeds.
4. The Contractor is responsible for damaging or altering the bench marks and baselines established by the Construction Manager and shall bear the costs of replacing same.

K. FIELD OFFICE AND STORAGE TRAILERS

1. Contractor shall provide and maintain its own field office and storage trailers as required.
2. Contractor shall provide temporary heat and power for its field office and storage trailer.
3. Contractor's field offices and storage trailers shall be located as directed by the Construction Manager.

L. PROJECT SIGN

1. The Construction Manager will provide a Project Sign naming the major participants, as determined by the Owner.

M. TRASH DISPOSAL

1. Each Contractor shall be responsible for daily clean up and depositing its

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common trash in the dumpsters provided by the Construction Manager.

2. The Construction Manager will not provide a trash chute.
3. The Construction Manager will provide dumpsters, and will arrange for disposal of common, non-hazardous, work-related trash deposited in these dumpsters.

N. HOISTING

1. Contractor shall provide its own materials hoists and cranes. No personnel hoist will be provided.

O. SCAFFOLDING AND WORKING PLATFORMS

1. No scaffolding shall be provided by the Construction Manager. Each Contractor shall provide all scaffolding required to perform its Work.

P. SAFETY BARRICADES AND RAILINGS

1. The Structural Contractor shall provide barricades **and protective barriers** around elevator, stair, shaft and cut openings in floors and roofs, and edges of floors and roofs. The methods and materials used in barricading shall be in accordance with OSHA and local code regulations. Barricades and protective barriers will be installed immediately after the installation of the floor slab on any level or part of a level on the Building. Until a level has been fully barricaded, the Structural Contractor will be responsible for maintenance of the barricades. When a warning barricade is used to prohibit employees from entering a restricted work area. The "warning barricade" shall meet the requirements of CFR 1926.502 (f)(2). The supported rope, wire, or chain shall be flagged at not more than 6-foot (1.8 m) intervals with high-visibility material and maintain between 34 and 39 inches above the walking/working surface; Warning signs and tags shall be used in accordance with Subpart G of CFR OSHA Construction Industry Regulations.
2. After the barricades and protective barriers are no longer needed, the Structural Contractor will remove the barricades from the site. The Construction Manager will determine the location and scheduling of barriers to be removed.
3. Contractor shall provide for its own barricades at all other trenches, excavations, and locations not specifically identified in Paragraph 1 above.
4. Contractors who remove barricades shall be responsible for replacing them. If, after proper notification, in writing, from the Construction Manager the responsible Contractor does not correct his deficiencies in safety barricade placement, the Construction Manager reserves the right to undertake this work

and backcharge the responsible Contractor(s).

5. During the execution of his work, Contractor will provide daily maintenance of, and upon completion of same, restore all barricades in a manner acceptable to prevailing safety standards enforced by local, State or Federal ordinance, whichever is most stringent. The intent is to leave no floor penetration or perimeter opening in an unsafe condition.
6. The Construction Manager shall arrange for temporary ladders required for access to each of the floor levels after the completion of floor slab work, and until the final stairs are ready for use.

Q. PUMPING AND DRAINAGE

1. Contractor shall provide its own pumping and drainage.
2. When an area is released by one Contractor to another, the Contractor releasing an area shall be responsible for leaving it in a drained condition. The incoming Contractor shall assume responsibility for drainage on the day that he is scheduled to start work in the area. If the incoming Contractor is late in starting work, he shall assume responsibility for pumping and drainage arising as a result.

R. TEMPORARY BUILDING ENCLOSURES

1. The Construction Manager will equip all temporary exterior doors of the building with self-closing hardware and padlocks.
2. All other temporary enclosures and protection shall be provided by the Contractor requiring the protection.
3. Temporary enclosures required due to late delivery of materials or untimely installation of work shall be the responsibility of the Contractor responsible for the delay.

S. TEMPORARY POWER AND LIGHTING

1. Contractor shall provide all extension cords and outlets as required for obtaining electric power from power centers provided by the Electrical Contractor. Refer to Section 015113 - TEMPORARY ELECTRIC.
2. Contractor shall provide its own additional temporary lighting of sufficient lighting levels to properly install his work.

T. PROTECTION OF ADJACENT MATERIALS

1. Contractor shall protect adjacent materials and finishes from damage as a result of its work.

U. CLEAN UP

1. Contractor shall arrange for clean up and removal of debris resulting from its operations, and shall dispose of debris in accordance with the provisions of Paragraph 2.13 above. Clean up shall be on a continual basis to ensure that building, grounds and public properties are maintained free from accumulations of waste materials and trash.
2. The Contractor will limit use of and ensure that all materials, including waste, that are combustible or flammable will be removed from the building continually, as work progresses, **and at a minimum** at the end of each work day. All trash which is potentially edible or may attract rodents or insects will be disposed of in metal containers and removed by the end of the work day.
3. At completion of its Work, each Contractor shall remove waste materials, rubbish, tools, equipment, and clean up all exposed surfaces in preparation for final cleaning.
4. If, after notification in writing from the Construction Manager, the Contractor does not correct its deficiencies in housekeeping within twenty four (24) hours, the Construction Manager reserves the right to undertake the Work and to backcharge the Contractor.
5. Final clean up prior to Owner occupancy shall be arranged for by the Construction Manager.

V. DUST PROTECTION

1. Contractor shall be responsible for dust protection whenever its operations will produce dust and dirt that might affect the buildings properties adjacent to work areas. Contractor shall be responsible for all cleaning required due to its failure to provide adequate dust protection.

W. PROTECTION OF EXISTING CONSTRUCTION

1. Contractor shall be responsible for all damage that it may cause to materials and equipment stored or installed by other Contractors.

X. OTHER

1. Contractor shall provide any other Temporary Facilities and services that it requires and which are not specifically identified above.

3. PERMITS

- 3.1 The Construction Manager will obtain the Building Permit. All other permits are to be obtained and paid for by the Contractor requiring them.

4. EXECUTION

A. GENERAL

1. Contractor shall install all temporary facilities in accordance with applicable codes.
2. Contractor shall maintain temporary facilities for which it is responsible throughout the construction period.
3. Contractor shall remove all temporary facilities for which it is responsible when they are no longer required or when the Construction Manager directs the removal of same.
4. Contractor shall repair all damage to the Project Site caused by the installation of its temporary facilities.

END OF SECTION

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SECTION 016200 - MATERIAL AND EQUIPMENT

1. GENERAL CONDITIONS

- A. The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary and other Conditions, if any) and Division 1 as appropriate apply to the Work specified in this Section.
- B. Where work is to be executed under Separate Prime Contracts, the provisions of this Section apply to each Contract.

2. REQUIREMENTS INCLUDED

- A. All materials and equipment incorporated into the Work shall:
  - 1. be new;
  - 2. conform to applicable specifications and standards; and
  - 3. comply with size, make, type and quality specified, or as specifically approved in writing by the Architect.
- B. Manufactured and Fabricated Products shall conform to the following requirements:
  - 1. Designed, fabricated and assembled in accord with the best engineering and shop practices.
  - 2. Manufactured like parts of duplicate units to standard sizes and gauges, to be interchangeable.
  - 3. Two or more items of the same kind shall be identical, by the same manufacturer.
  - 4. Products shall be suitable for service conditions.
  - 5. Equipment capacities, sizes and dimensions shown or specified shall be adhered to unless variations are specifically approved in writing.
- C. Contractor shall not use materials or equipment for any purpose other than that for which it is designated or is specified.
- D. Materials removed from existing structures shall not be reused in the completed work unless specifically indicated or specified.
- E. For materials and equipment specifically indicated or specified to be reused in the Work:

1. Contractor shall use special care on removal, handling storage and reinstallation, to assure proper function in the completed Work.
2. Arrange for transportation, storage and handling of products which require off-site storage, restoration or renovation. Pay all costs for such work.

3. MANUFACTURER'S INSTRUCTIONS

- A. When Contract Documents require that installation of work shall comply with manufacturer's printed instructions, Contractor shall obtain and distribute copies of such instructions to parties involved in the installation, including two copies to Construction Manager.
  1. Maintain one set of complete instructions at the job site during installation and until completion.
- B. Contractor shall handle, install, connect, clean, condition and adjust products in strict accord with such instructions and in conformity with specified requirements.
  1. Should job conditions or specified requirements conflict with manufacturer's instructions, Contractor shall consult with Construction Manager for further instructions.
  2. Contractor shall perform work in accord with manufacturer's instructions. Contractor shall not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.

4. TRANSPORTATION AND HANDLING

- A. Contractor shall arrange deliveries of Products in accord with construction schedules, coordinate to avoid conflict with work and conditions at the site.
  1. Deliver Products in undamaged condition, in manufacturer's original containers or packaging, with identifying labels intact and legible.
  2. Contractor shall immediately on delivery, inspect shipments to assure compliance with requirements of Contract Documents and approved submittals, and that Products are properly protected and undamaged.
- B. Contractor shall provide equipment and personnel to handle Products by methods to prevent soiling or damage to Products or packaging.

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5. STORAGE AND PROTECTION

- A. Contractor shall store Products in accord with manufacturer's instructions, with seals and labels intact and legible.
  - 1. Contractor shall store Products subject to damage by the elements in weathertight enclosures.
  - 2. Contractor shall maintain temperature and humidity within the ranges required by manufacture's instructions.
- B. Exterior Storage
  - 1. Contractor shall store fabricated Products above the ground, on blocking or skids, to prevent soiling or staining. Cover Products which are subject to deterioration with impervious sheet coverings; provide adequate ventilation to avoid condensation.
  - 2. Contractor shall store loose granular materials in a well-drained area on soiled surfaces to prevent mixing with foreign matter.
- C. Contractor shall arrange storage in a manner to provide easy access for inspection. Contractor shall make periodic inspections of stored Products to assure that Products are maintained under specified conditions, and free from damage or deterioration.
- D. Contractor shall store flammable materials so as to prevent contact with flames and fire. Conform with manufacturer's recommendations and local laws. Pay particular attention to storage of:
  - 1. Roof insulation.
  - 2. Roofing materials, including solvents.
  - 3. Paint materials.
  - 4. Cleaning and other solvents.
  - 5. Fuels.
- E. Protection after Installation:
  - 1. Contractor shall provide substantial coverings as necessary to protect installed Products from damage from traffic and subsequent construction operations. Remove when no longer needed.



6. SUBSTITUTIONS AND PRODUCT OPTIONS

A. Product List.

1. Within 30 days after Contract Date, Contractor shall submit to Construction Manager a complete list of major products proposed to be used, with the name of the manufacturer and the installing Contractor.

B. Contractor's Options.

1. For Products specified only by reference standard, Contractor shall select any Product meeting that standard.
2. For Products specified by naming several Products or manufacturers, Contractor shall select any one of the Products or manufacturers named which complies with the specifications.
3. For Products specified by naming one or more Products or manufacturers and "or equal", Bidders must, during the bidding period, submit a request for substitutions for any Product or manufacturer not specifically named. See provisions in Paragraph 6.C, below.
4. For Products specified by naming only one Product and manufacturer, there is no option; and Contractor shall provide the precise Product specified.

C. Substitutions.

1. Until a date no later than seven (7) days before the date Bids are due, Architect will consider written requests from bidders for substitution of Products. **The contractor will submit any substitution requests to the Construction Manager for transmittal to the Architect. The** architect will review requests and will notify Bidders in an Addendum if the requested substitution is acceptable.
2. Should the Bidder desire a substitution, it shall submit a separate request for each Product, supported with complete data, with drawings and samples as appropriate, including:
  - a. Comparison of the qualities of the proposed substitution with that specified.
  - b. Changes required in other elements of the Work because of the substitution.
  - c. Effect on the construction schedule.
  - d. Cost data comparing the proposed substitution with the Product specified.

- e. Any required license fees or royalties.
- f. Availability of maintenance service, and source of replacement materials.
- 3. Architect, in its sole discretion, shall be the judge of the acceptability of the proposed substitution.
- 4. A request for a substitution constitutes a representation that Bidder:
  - a. has investigated the proposed Product and determined that it is equal to or superior in all respects to that specified;
  - b. will provide the same warranties or bonds for the substitution as for the Product specified;
  - c. will coordinate the installation of an accepted substitution into the Work, and make such other changes as may be required to make the Work complete in all respects; and
  - d. waives all claims for additional costs, under his responsibility, which may subsequently become apparent.
- D. Architect will review requests for substitutions with reasonable promptness, and notify Bidders, in writing, through the Construction Manager, of the decision to accept or reject the requested substitution. Any decision to accept a substitution must be confirmed in an Addendum issued during the bidding period in order to be valid. Oral approvals will not be binding.

END OF SECTION

SECTION 017123 - FIELD ENGINEERING

1. GENERAL PROVISIONS

- A. The general provisions of the Contract, including the Conditions of the Contract, (General, Supplementary and other Conditions, if any) and Division 1 as appropriate, apply to the Work specified in this Section.
- B. The provisions of the section apply to all contracts.

2. SURVEY

- A. The Owner has had a site survey prepared by Landmark Engineering. This information has been included in this Bid Pack.

3. CONSTRUCTION MANAGER

- A. The Construction Manager will establish a bench mark and base line from which structures and grades shall be laid out by Contractors as designated in this section. The total extent of this layout is shown on the site drawings. One bench elevation shall be provided.

END OF SECTION

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SECTION 017700 – CONTRACT CLOSEOUT

1. DESCRIPTION OF REQUIREMENTS

- A. Provisions of this section apply to the procedural requirements for the actual close out of the Work, not to the administrative matters such as final payment or the change over of insurance. Close out requirements relate to both substantial and final completion of the Work; they also apply to individual portions of completed work as well as the Total work. Specific requirements contained in other sections have precedence over the general requirements contained in this section.

2. PROCEDURES AT SUBSTANTIAL COMPLETION

- A. Prerequisites: Contractor shall comply with the General Conditions and complete the following before requesting inspection of the Work, or a designated portion of the Work, for certification of substantial completion:

1. submit executed warranties, workmanship bonds, maintenance agreements, inspection certificates, releases of liens, tax certification and similar required documentation for specific units of work, and documents needed to enable Owner's unrestricted occupancy and use;
2. submit record documentation, maintenance manuals, tools, spare parts, keys and similar operational items;
3. complete instructions of Owner's operating personnel, and start up of systems; and
4. complete final cleaning and remove temporary facilities and tools.

- B. Inspection Procedures: Upon receipt of Contractor's request, Architect/Engineer will either proceed with inspection or advise Construction Manager of prerequisites not fulfilled. Following initial inspection, Architect/Engineer will either prepare certificate of substantial completion, or advise Construction Manager of work which must be performed prior to issuance of certificate. The Architect/Engineer will repeat the inspection when requested and assure that the work has been substantially completed. Results of the completed inspection will form the initial "punch list" for final acceptance.

- C. Punch List Procedures: Each Contractor shall be given a copy of the punch list with its appropriate work identified. Each Contractor shall be given 9 (nine) calendar work days to complete their punch list work. On the 10th day or as determined by the Construction Manager the Construction Manager shall employ other Contractors, as required, to complete any incomplete punch list work and retain from the appropriate Contractors retainage all costs incurred.

3. PROCEDURES AT FINAL ACCEPTANCE

- A. Re-inspection Procedure: The Architect/Engineer will re-inspect the Work upon receipt of the Contractor's notice that, except for those items whose completion has been delayed due to circumstances that are acceptable to the Architect/Engineer, the Work has been completed, including punch list items from earlier inspections. Upon completion of re-inspection, the Architect/Engineer will either recommend final acceptance and final payment, or will advise the Contractor of work not completed or obligations not fulfilled as required for final acceptance. If necessary, this procedure will be repeated.

4. RECORD DOCUMENTATION

- A. Record Drawings: Contractor shall maintain a complete set of either blue or black line prints of the contract documents and shop drawings for record mark-up purposes throughout the Contract Time. Contractor shall mark up these drawings during the course of the Work to show both changes and the actual installation, in sufficient detail to form a complete record for Owner's purposes giving particular attention to work that will be concealed and difficult to measure and record at a later date, and Work which may require servicing or replacement during the life of the project. Require the entities marking prints to sign and date each mark up. Bind prints into manageable sets, with durable paper cover, appropriately labeled.
- B. Installation, Operation and Maintenance Manual: Contractor shall provide 3-ring vinyl covered binders containing required maintenance manuals, properly identified and indexed and including operating and maintenance instructions extended to cover emergencies, spare parts, warranties, inspection procedures, diagrams, safety, security, and similar appropriate data for each system of equipment item.
- C. State Tax Certification: Contractor shall provide recent Delaware State Tax Certification form as issued by State of Delaware, Department of Finance, Division of Revenue, Carvel State Office Building, 820 N. French Street, Wilmington, Delaware 19801.
- D. AIA Documents: Contractors shall provide the following AIA documents with their final payment application submission:
- AIA G732, Application for Payment for 100% Complete
  - AIA G732, Final Application for Payment for Retainage
  - AIA G704-CMA, Certificate of Substantial Completion – 4 originals
  - AIA G706, Affidavit of Payment of Debts & Claims
  - AIA G706A, Affidavit of Release of Liens
  - AIA G707, Consent of Surety
- E. Release of Liens: Contractors shall provide the following release of liens with their final payment application submission:

- Prime Contractor's Release of Liens
- Subcontractors' & Suppliers' Release of Liens (major subs and suppliers)

5. GENERAL CLOSE OUT REQUIREMENTS

A. Operator Instruction: Contractor shall require each Installer of systems requiring continued operation and maintenance by Owner's operating personnel, to provide on location instruction to Owner's personnel, sufficient to ensure safe, secure, efficient, non-failing utilization and operation of systems. Contractor shall provide instructions for the following categories of work:

1. Mechanical/electrical/electronic systems (not limited to work of Division 15 and 16).
2. Roofing, flashing, joint sealers.
3. Floor finishes.
4. Door hardware

6. FINAL CLEANING

A. At the time of project close out Contractor shall clean or re-clean the Work to the condition expected from a normal, commercial building cleaning and maintenance program. Complete the following cleaning operations before requesting the Architect/Engineer's inspection for certification of substantial completion:

1. Remove non-permanent protections and labels.
2. Polish glass.
3. Clean exposed finishes.
4. Touch up minor finish damage.
5. Clean or replace mechanical systems filters.
6. Remove debris.
7. Broom clean unoccupied spaces.
8. Sanitize plumbing and food service facilities.
9. Clean light fixtures and replace burned out lamps.

10. Sweep and wash paved areas.

11. Police yards and grounds.

END OF SECTION